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SOUTHWESTERN MEDICINE

VOLUME VII AUGUST, 1923 No. 8

Official Organ of the New Mexico Medical Society, Arizona State Medical Association, El Paso County (Texas) Medical Society and the Medical and Surgical Association of the Southwest

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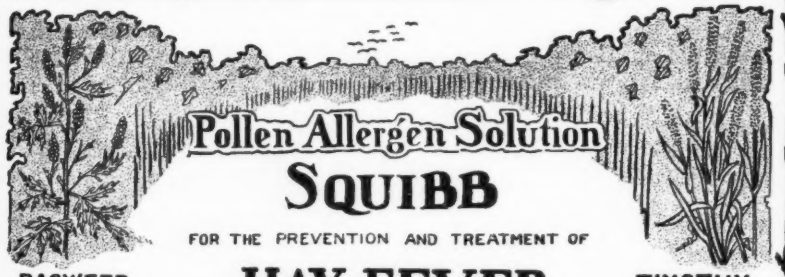

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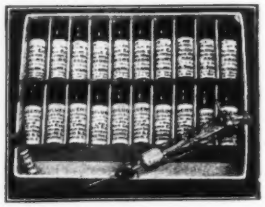

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Werley, G.—401-2 Roberts-Banner Building. Diseases of the Heart.

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Miller, F. P.—Suite 514 Martin Building. General Medicine and Surgery.

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Britton, James M.—Practice limited to Eye, Ear, Nose and Throat. 502 Two Republics Bldg.

Von Almen, S. G.—218 Mills Building. Practice limited to Diseases of the Eye, Ear, Nose and Throat.

NEUROLOGY

McChesney, Paul Ely—524 Mills Building. Neurology and Psychiatry.

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Rawlings and Leigh—404 Roberts-Banner Building. Practice limited to Diseases of Children and Obstetrics.

RADIOLOGY

Cathcart and Mason—311 Roberts-Banner Building. Practice limited to X-ray and Radium.

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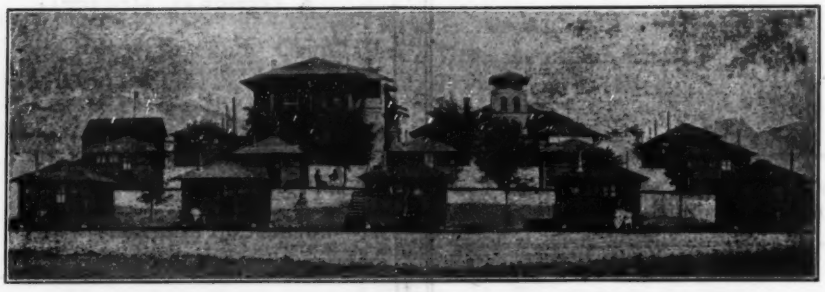

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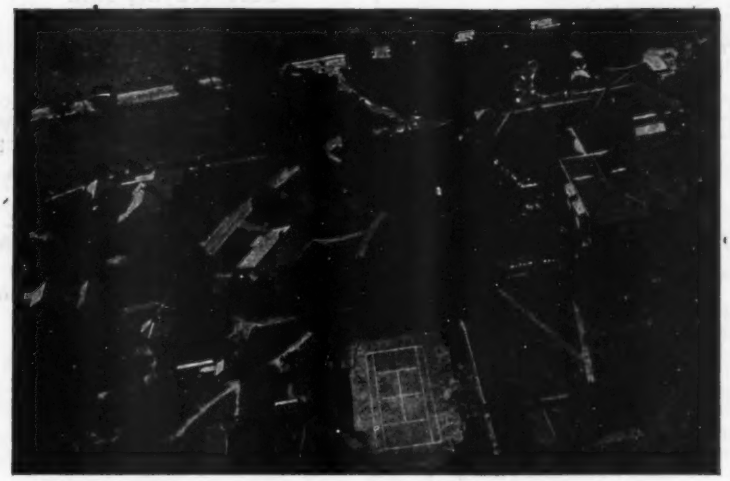

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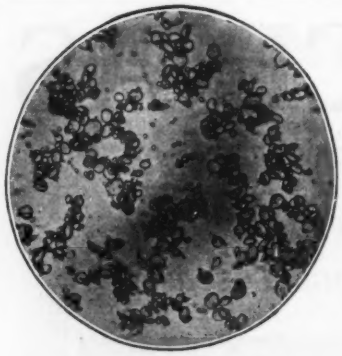

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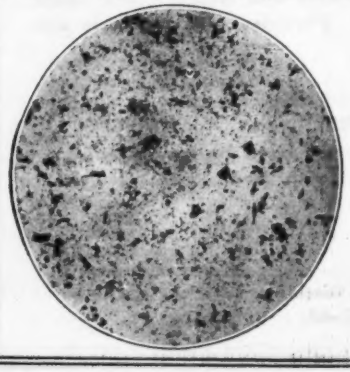

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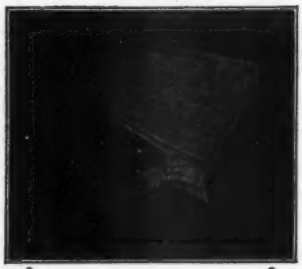

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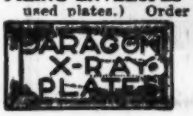

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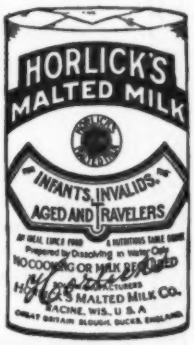

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HAY FEVER IN CENTRAL ARIZONA*

E. W. PHILLIPS, M. D., Phoenix, Arizona.

This article records the continuation of the study of pollen disease (hay fever and seasonal asthma), in central Arizona. It is based on the examination of 179 hay fever patients who reside in this region at varying altitudes, and of others who came from outside points throughout the Southwest. I have also been privileged to review tests made by physicians working in widely separated towns, both in Arizona and in New Mexiso. It appears that the hay fever problem as it presents itself in central Arizona is fairly typical of that encountered elsewhere in the two states; and since with more experience the local problem has been found to be simpler than at first it seemed to be, the work is reported in the hope that it may have a wider usefulness.

Only recently has the matter of hay fever in the Southwest begun to receive the attention it deserves. This neglect was not for lack of clinical material. In central Arizona the incidence of hay fever among the white*[1] residents is well above the traditional one per cent, and physicians living in certain towns of Arizona and New Mexico state that in their communities ten per cent is nearer to the truth. The reasons for the prevalence of pollen disease are obvious: "The climate is subtropical, with a pollinating season of about nine months, and large areas under irrigation are not intensively cultivated, so that weeds grow profusely. The lack of rainfall allows pollen to stay a long time in the air, and still longer in the dust. For these reasons the number of pollen sufferers is large; those sensitive at the outset to one pollen, in time acquire multiple sensitization * * * and as population and irrigation increase, so does the amount of pollen in the air and the number of those made ill by it."[2] Outside the irrigated districts the hay fever seasons are separate, not continuous, for the plants must depend on the scant and irregular rainfall; but there is much waste land, and after the summer rains hay fever is proportionately as prevalent as in the valleys, though less severe.

The literature of the region under discussion is brief. In March, 1922, Watson and Kibler[3] of Tucson, working with Professor J. J. Thornber of the University of Arizona, published a list of all the plants capable of producing hay fever in the Southwest, which they showed to be different from those of any other region. They designated seven plants as the most important, and

*FOOTNOTE—Dr. A. J. Wheeler, physician to the Indian School at Phoenix, informs me that no case of hay fever occurred among more than 1000 Indians observed during the past year. I have never seen a Mexican with hay fever or pollen asthma.

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pointed out the futility of trying to treat hay fever in the Southwest with the pollens of plants that do not grow there. In April of the same year, Phillips,[2] who had worked independently, published a list of the principal hay fever plants of central Arizona, with a report of the treatment of seventeen patients with extracts of local pollens. His findings were essentially in accord with those of Watson and Kibler; he reported failures of treatment with foreign pollens, and advocated the use of local pollens for tests and treatment.

Identification of Local Hay Fever Plants. The allergic response in hay fever is specific. It follows, then, that in working out the causes of pollinosis in any region, it is only required to observe those pollens with which the inhabitants necessarily come in contact, collect them, and test hay fever sufferers therewith. The task of selection is made lighter by a little knowledge of plant physiology. Plants produce pollen with one object; to reach and fertilize the ovary. Some plants, relying on insects as pollen carriers, develop bright-colored flowers with fragrance and nectar by way of advertisement; such flowers produce a small quantity of heavy sticky pollen that will adhere to the body of the insect visitor. Other plants, discarding the insect inducements, produce fine buoyant pollen which is consigned to the winds, in a quantity best understood by reflecting that the male plant must saturate the air of its whole environment in order to reach the female blossom and so perpetuate its species. It is this air-borne pollen of the wind-fertilized or anemophilous plants that causes hay fever. Such plants are the trees, weeds, and grasses. They have very inconspicuous flowers; the unobservant would say that they had none at all. And because most patients are unobservant they usually are mistaken, unless they have been instructed in the matter, concerning the cause of their hay fever. They accuse whatever in nature is conspicuous at the time their affliction is upon them. In the Southwest, roses and the hairy seed of the female cottonwood are the favorite scapegoats, and even such plants as honeysuckle and beeweed (*Cleome*), which could not by any possibility cause hay fever, are objects of suspicion.

It ought not to be necessary to repeat to physicians this truism that wind-pollinated plants alone, and never the brightly-flowering plants, are the source and origin of hay fever. Yet it is the fact, attested by numerous letters and specimens sent for identification, that many of our doctors either do not know this etiology or will not believe it. There are, of course, exceptions to the etiological rule, but they are unimportant in general work.

Along with the insect pollinated plants, a great number of wind-pollinated plants may be ruled out as hay fever causes. The laws which determine the relative importance of the wind-pollinated plants have been well stated by the botanist Hall[4] as follows:

1. Only those species which are abundant in settled districts need be investigated.
2. The members of certain botanical groups, notably the pines and sedges, are negligible.
3. The size and weight of the individual pollen grain is constant for any species, and in large measure determines its effective range. Only plants whose pollen is fine and buoyant are of general importance as hay fever producers.

These rules have been found to apply very strictly in this investigation. Of some thirty-six species whose pollen was collected and tried out, only the few to be mentioned hereinafter were found to affect any considerable number of patients.

HAY FEVER PLANTS OF THE TWO MAIN REGIONS

It was found that for the purpose of this study central Arizona may be divided into two main regions. *The Irrigated Valleys*, possessing a perpetual water supply, rank vegetation, and a relatively dense population, have most of the hay fever. The season begins about the first of February with the pollen of the cottonwood trees (*Populus macdougali* and other species). After a month the ash trees (*Fraxinus attenuata*) release rather abruptly a large quantity of pollen which, with some

from belated cottonwoods, is in the air until about the first of April. Bordering the valleys is the desert from which they were reclaimed. Here the rabbit bush (*Franseria deltoidea*) thrives, and at some time in early spring makes a relatively unimportant contribution to the atmospheric burden.

About the first of April, earlier or later with the first warm weather, Bermuda grass (*Cynodon dactylon*) comes into action. This was the first successful summer lawn grass in the Phoenix country; it stands any amount of heat and retains its vitality through prolonged drought. It runs out the negative grasses and has spread far and wide. Wherever it grows freely Bermuda grass is the principal cause of hay fever, for it releases its fine buoyant pollen in amazing quantity from April to November, though with some falling off during the drought which comes before the summer rains.

In May the Johnson grass (*A. sorghum halepense*) begins to bloom, but it affects as a rule only ranchers. About the first of July, and from then on with increasing energy until fall, the common careless weed or pigweed (*Amaranthus palmeri*) and other closely related amaranths give off their pollen. At various times during the summer the saltbushes, large and small (*Atriplex* genus) reinforce them. I have never been able to convince myself that the saltbushes are of much importance in the valleys. The pigweeds, on the other hand, cause severe symptoms, especially among those who are also sensitive to the pollen of Bermuda grass, then in its second period of profuse blooming.

To summarize, the irrigated valleys have a continuous hay fever season of nine months. The common shade trees, cottonwood and ash, account for the first two months of this, and Bermuda grass covers the remaining seven, sharing the latter half of its period with the pigweeds. The outstanding clinical fact is that with dry air, no windbreaks, and a veritable riot of vegetation the pollens of only four plants are of much importance, and of these Bermuda grass causes more trouble than the other three combined.

In the *Hill and Mountain Country* the picture is less distinct, the vegetation being modified by altitude and rainfall. The variation is mainly in the causes of sprng hay fever, whch after all is neither extensive nor severe. If junipers are present abundantly, they cause a mild and intermittent disease in late winter and early spring. At lower altitudes scrub oak and cottonwood affect a few. In the region covered by this study there is not enough wild grass to cause spring hay fever, but wherever Bermuda grass has been successfully introduced it gives trouble all summer. In most places of the hill country the main hay fever season begins some time in June and continues until frost. Russian thistle (*Salsola pestifer*) blossoms first, closely followed by the pigweeds and locally abetted by the saltbushes, of which the little annual saltbush (*Atriplex wrightii*) is the most vigorous pollen producer. In August the false ragweeds (*Franserias*) come on, exactly as do the true ragweeds in the East. In the northern part of our range, bur ragweed (*Franseria acanthicarpa*) leads the group; farther south the false or slender bur ragweed (*Franseria tenuifolia*) is more abundant. The true western ragweed (*Ambrosia psilostachya*) is plentiful, but unlike its eastern relative it has rather a large pollen grain and in consequence only a local effect. Of the wormwoods, two small annuals (*Artemisia campestris* and *A. vulgaris wrightii*) are the commonest. Their distribution is so uneven that they must be relegated to the group of local and minor causes. The late summer grasses, notably *Chloris elegans* and *Bouteloua aristoides*, affect only an occasional patient, usually one who was previously sensitized to Bermuda grass.

Northern Arizona, and northern New Mexico so far as that has been studied, have a similar arrangement except that Russian thistle is the chief hay fever plant, while the wormwoods, including at a few places true sagebrush (*Artemisia tridentata*), outrank the ragweeds.

At first sight this appears complicated but it will be observed that any given locality in the hill country has

only three or four important pollens, and most of its hay fever from only one or two. With a little study of local plant life and careful testing with the pollens of all the proved hay fever plants known to occur in that part of the state, any physician can find out for himself the ones of importance in his own community.

MATERIALS AND METHODS

Little space need be devoted to these; the detailed technic of pollen collection and extraction has been fully and widely published[5, 6, 7, 8]. Certain points brought out in this experience may be worth passing on. The first is the necessity of using only naturally ripened pollens; this will be referred to again. Also, it is important that before extraction the pollen shall be brought to a state of almost absolute purity, by which I mean that under the high dry lens there can be found practically nothing but pollen granules, and these all alike. In this country, collected pollen is likely to contain dust and plant detritus the particles of which are little larger than the pollen grains. The dust is a source of error in weighing out the material; the plant detritus has an even worse effect, for it contains tannin which precipitates the proteins out of solution. Clock's method of extraction was used, because the watery extracts had given trouble by deteriorating. Good results, however, were obtained with the watery extracts while they were fresh, though a larger dose was required than of glycerin extracts.

SELECTION OF TREATMENT

Before undertaking to treat a patient, it is necesary to make sure that he has hay fever. One cannot take his word for it; a careful history is most important. The history should show characteristic recurrent seasonal attacks, with the date of onset almost the same each year; the distinctive ocular and nasal symptoms, and frequently, after a few days or weeks, more or less asthma. All these symptoms are made worse by certain exposures known to the patient, and at the end of the pollen season they all disappear. Finally, the patient should give definitely positive skin reactions to extracts of one or more of the pollens found in his environment, and the blossoming time of the plants so implicated should coincide with the time of the patient's illness.

Skin Tests. The success of treatment depends on the correct performance and interpretation of the skin tests. For ordinary hay fever work the so-called scratch test has been entirely satisfactory. Drops of test solutions of those pollens to which the patient has been exposed are placed in one or two rows on the flexor surface of the forearm, and through each drop is made a cut 1/16 of an inch long, just deep enough to open the lymph channels but not deep enough to draw blood. It is important that all the cuts be made exactly alike, that reliable test solutions of uniform strength be used, and that no test be placed over the rich lymphatic network about the bend of the elbow. A positive reaction is shown within twenty minutes or less by the appearance of a typical white or pinkish urticarial wheal which spreads with sharp irregular margins, often showing pseudopod-like projections. To be considered positive, the wheal must be at least 0.5 cm. in diameter; usually it is much more. About it spreads a vivid erythema, and it itches.

A few patients, especially those in their first or second attack, require a more delicate test to reveal their sensitization; for such the intradermal test is employed. With this method, not more than 0.02c.c. of a 1:5000 solution of those pollens implicated by the history is injected between the layers of the skin, while a similar injection of the diluent is made as a control. This method is used also to determine accurately to which of two pollens a patient is more highly sensitized. Reactions, if they occur, are prompt and vigorous, sometimes violent. Cooke[9] has courageously reported a death from an intradermal test.

Usually the result of the tests is a strongly positive reaction to one or more of the pollens known to be in the air at the place where the patient lives.

during the time when he has hay fever. Such a conjunction of history, tests, and botanical information furnishes an unmistakable indication for treatment. There are two occasional sources of confusion. The detailed history—and every history should be such—may not show a sharply limited hay fever season; it may relate that the patient, while suffering severely at a certain time of year, has trouble at irregular intervals during the rest of the year, not dependent upon obvious catarrhal infections accompanied by constitutional symptoms.. In such a case it is in order to investigate sensitization to the protein-bearing dusts, chiefly sachets and animal danders. In this dry climate such dusts are buoyant, and cause considerable trouble.* If the patient reacts to both pollen and a dust, it is necessary to eliminate the dust or else to desensitize to it; otherwise the most careful pollen treatment will fail to confer satisfactory relief.

A second cause of confusion in the interpretation of tests is the phenomenon known as group reaction; that is, a person sensitized to the pollen of one member of a botanical group is liable to react more or less to the pollens of other members of that group, even though he may never have been exposed to them. The botanical groups concerned in the present study are the grasses, the wormwoods, the ragweeds, and the pigweeds or chenopodiaciae group of Scheppegrell.[10] Only tentative conclusions are justified by the observations so far made; the subject is a broad one, and deserves thorough handling. Provisionally, it may be stated that in this region the biologic grouping does not coincide exactly with the botanical grouping based on morphology, nor are all the groups of equal authority. Among the grasses the tendency to interreaction is slight. Patients who react strongly to Bermuda grass pollen, for example, do not as a rule show any reaction to the pollens of the eastern grasses; but those who in the East have suffered from timothy hay fever are almost certain after a few years' residence in the Salt River Valley to acquire sensitization to Bermuda grass. A parallel tendency is noticeable in the other groups also; the large proportion of new residents in Arizona affords an unusual opportunity to observe this allergic fidelity. Ragweed victims from the East have trouble from the franserias after two or three years, if they come to the hill country; a very few have hay fever the first season. The pigweed group shows the most marked tendency to interreaction. It includes not only the amaranths, the species of which interreact very closely, but Russian thistle and some of the saltbushes as well; yet even here the local and the foreign pollens are not interchangeable. Only four per cent of those tested showed full group sensitization, reacting equally to the pollens of all available members of a biologic group. These patients, according to their histories, had hay fever whenever and wherever they were exposed to any of these pollens; probably treatment with any one of the reacting pollens would have protected them from all. The remaining ninety-six per cent gave the strongest reaction to that pollen to which, in their usual environment, they were most exposed. Group reactions to the biologically allied pollens occurred often, but they were of lesser intensity. It is, therefore, in either case a safe rule to ignore minor reactions and to employ in treatment only that local pollen to which the patient has the strongest reaction and the heaviest exposure.

*FOOTNOTE—Two patients recently seen were sensitive to pyrethrum (fly powder), and had severe symptoms when exposed to it.

PRESEASONAL OR PREVENTIVE TREATMENT

The cause having been ascertained, treatment is begun, preferably three months before the expected onset, by testing with the diluent as a control, with the 1:10000, and the 1:5000 dilutions of the selected pollen. Usually the 1:5000 gives a slight reaction, the 1:10000 none; if the 1:10000 reacts, the 1:20000 is tried. The first dose is 0.15 c.c. of the dilution next higher than the weakest which reacted. From this point the dosage is increased as tolerated, until at the sixteenth dose, reached just before the usual time of

onset, about 0.75 c.c. of the 1:500 is administered. There is no set schedule of dosage applicable to every case; the reaction after each dose determines the size and the interval of the dose to follow. If time permits, an interval of five to seven days between doses is desirable. An average dose record is: Of the 1:10000 solution, 0.15 c.c. Of the 1:5000 solution, 0.15 c.c., 0.25 c.c., 0.35 c.c., 0.50 c.c., 0.65 c.c., 0.80 c.c., 1.00 c.c. Of the 1:500 solution, 0.12 c.c., 0.18 c.c., 0.25 c.c., 0.35 c.c., 0.45 c.c., 0.60 c.c., 0.75 c.c.

Some patients tolerate a more rapid rate of increase, and if time presses a shorter dose interval is used, but no injection is given until the reaction from the previous dose has subsided. Toward the end of the course signs of desensitization are observed; local reactions become mild and transient, while the skin test is weakened or abolished. Experience indicates that it is necessary to bring about such desensitization, no matter how many doses are required to do it, and that treatment should be continued a week or so into the season, without increasing the dose after the pollen is abundant in the air. In this country, with its massive pollen exposure, this last rule applies even though a late beginner has not yet reached a full dosage; but a stationary or decreasing dose may be continued into the season as long as desired. Disregard of these rules leads to pollen shock.

REACTIONS

The *ordinary local reaction,* occurring at the site of injection, begins after a few minutes and soon appears as a roughly circular area of bright erythema, densely indurated, itching but not tender, and two or three inches in diameter. It should vanish in thirty-six hours. If it spreads all over that part of the limb, looks like erysipelas, and persists longer than thirty-six hours, it is an *excessive local reaction,* and indicates that the dose is at the top limit of safety. In order to retain the local reaction as a guide, it is well to vary the site of injection. If all the doses are given into one area the subcutaneous tissue there is soon desensitized and the local reaction lost. If good local reactions do not follow at least the earlier doses of the series, either the solution is inert or the wrong pollen is being used in treatment.

Slight general reactions, consisting of hay fever for a few hours and a tendency to generalized pruritus, occur occasionally when the dosage is being pushed or the doses given close together. Like excessive local reactions, they mean that the next dose should not exceed the one just given and that the interval should be lengthened.

A severe general reaction or *pollen shock* sets in as a rule promptly after the dose, but it may be delayed several hours. There appear, in rapid succession, intense hay fever, asthma, urticaria or giant urticaria with agonizing pruritus, tympanites, nausea, vomiting, tachycardia and sometimes collapse. Pollen shock should never occur during preseasonal treatment if proper care and reasonably good judgment in interpreting the effects of previous doses are used. The treatment of pollen shock is the immediate injection of ten minims of adrenalin, to be repeated promptly if no relief is obtained; later, sodium bicarbonate and plenty of water are indicated.

CONTRAINDICATIONS

Preseasonal treatment should not be given:

1. To patients with any grave organic disease, especially exopthalmic goitre, cardiorenal disease, or far advanced pulmonary tuberculosis. It has occasionally been observed that these invalids do not tolerate the injection of foreign protein, quite apart from its allergenic nature, in the quantities employed in preventive treatment.
2. To patients with suppurative conditions in the paranasal sinuses.
3. To chronic perennial asthmatics who have hay fever also, unless the other causes of the asthma can first be identified and removed. On the other hand, seasonal asthma caused solely by pollens is relieved more easily than is the hay fever which usually accompanies it.
4. To neurotics who do not really desire to be relieved of an ailment

which, besides exempting them from sundry duties, makes necessary long and expensive trips to hay fever resorts.

TREATMENT AFTER HAY FEVER DEVELOPS

This is what most patients seek until they learn better. It is unsatisfactory to give, because to the injected dose is added an unknown variable, namely, the pollen protein which the patient absorbs from his nose. Its results, however, are often gratifying. The initial dose is determined by the skin test, as in preventive treatment; subsequent doses are very gradually increased, the indication in this instance being the effect on the patient's symptoms, as well as the local reaction. An overdose makes the symptoms worse, or induces pollen shock; and this shock does not occur promptly, while the patient is within reach, but some hours later, usually in the early morning, when he breathes air which is heavily laden with pollen. If treatment during the season is attempted it should be continued for at least ten doses, or until either success or failure is assured.

RESULTS

In December of 1922 a note, with a return card, was mailed to eighty-nine patients treated during that calendar year, requesting a report under one of the following headings:

1. No relief.
2. Some relief; better than without treatment.
3. Marked or almost complete relief.
4. Complete relief.

Sixty patients complied with the request. Of these, fourteen or twenty-three per cent reported complete relief; twenty-four or forty per cent reported marked or almost complete relief; eighteen or thirty per cent reported some relief, better than without treatment; and four or six per cent reported no relief. It is interesting to examine these results more closely.

Of the fourteen who were completely relieved, six patients with ten hay fever seasons among them received ten full preseasonal courses. Eight patients with nine hay fever seasons among them were completely relieved by treatment begun after the onset of symptoms. Their average number of doses was six and they were practically free from symptoms after the fourth dose.

Of the twenty-four who reported marked or almost complete relief, twelve patients with twenty hay fever seasons among them were treated before the onset. On the average they received only three-fourths of a full preventive course, and in five cases this had to be supplemented by smaller doses during the season in order to keep the patient comfortable.

Twelve patients were almost completely relieved by treatment begun after the onset of symptoms. As in the preceding group, six was the average number of doses, but these were spread over a longer period (five weeks). In other words, these patients came irregularly for treatment.

Eighteen other patients reported some relief; better than without treatment. Six of this group were treated preseasonally, receiving three-fourths of a full preventive course. All were sensitized to bur ragweed (*Franseria acanthicarpa*), which was a light crop that year. In spite of the fact that they had not completed the preseasonal course, these people should have obtained more relief. The pollen with which they were treated had been collected by the method of Wodehouse[12], and much of it came from unripe anthers. As was later proved by comparison with a specimen naturally ripened, this pollen was poor in allergenic proteins.[11]

The remaining twelve who obtained only some relief were treated after the onset, and took on the average four doses before they abandoned treatment.

Four reported no relief whatever. Of these, one abandoned treatment early; one was a bur ragweed case treated with unripe pollen. The remaining two received full preseasonal courses of potent solutions, they had good local reactions, and the reason for failure is obscure.

DISCUSSION

It will be noted that of the patients reporting results, about half were treated before and half after the hay

fever had begun. The results for the two groups were to all practical purposes the same. One out of four was completely relieved, two out of five were almost completely relieved; taken together, two out of three got satisfactory results. Most of the others obtained some relief, or thought they did; one in every sixteen reported a complete failure.

In evaluating these reports it should be borne in mind that a patient who is relieved by treatment begun after his hay fever was in full blast, will express more appreciation than will another who has been helped in exactly the same degree by preventive treatment administered while he was well. The one gets rather more than he hoped for; the other, less. On the other hand, many hay fever victims, made irritable by discomfort and loss of sleep, abandon coseasonal treatment before they have given it a fair trial. My own observation is that those whose symptoms are mild or of recent origin do well with either sort of therapy. It is more difficult to protect those whose disease is severe and of long standing from the heavy pollen exposure of central Arizona; they can as a rule be made comfortable by thorough preseasonal treatment, supplemented by smaller doses continued well into the season.

Children respond brilliantly to either form of desensitization, and their tolerance to injected protein is relatively greater than that of adults.

Here we have a therapeutic measure which, by the patients' own account of it, gives satisfactory results to two-thirds of those who receive it, and lesser or no relief to the remaining third. Why are not all benefited alike? Why must treatment be repeated every year? The work here reported furnishes no answer; but two suggestive observations were made. As to the first, the cases above recorded occurred in private practice. Six other patients were treated at St. Luke's Home, in Phoenix, where they had the benefit of daily observation and controlled treatment until all symptoms were removed. Notwithstanding the fact that they spent all their time on porches surrounded by Bermuda grass, the cause of their trouble, all six were completely relieved. It may be that more intensive treatment under closer observation would improve our general results.

It was hoped that with the long period of pollen absorption it might be possible to desensitize some patients p e r m a n e n t l y. Encouragement was found in the apparent lessening of sensitization noted in a few now in their third year of treatment, but another experience of the present year is adverse. As was mentioned, several patients were shocked in the spring of 1922 by attempting to complete the preseasonal dose schedule after the pollen was in the air. This year a considerable number of Bermuda grass patients received so thorough a preseasonal course that the signs of desensitization were evident by the first of March. The season seemed to be early; the grass began to bloom about March fifteenth, and the treatment of these patients was discontinued. Then ensued a period of cool weather; the pollen held off until about April tenth, when it came on with a rush. Untreated patients began to apply for relief, and presently so did some who a few weeks earlier had shown good evidence of desensitization. Of those whose treatment we discontinued early, few have had satisfactory protection. To have stopped their treatment before hay fever generally appeared among the unprotected was an error of judgment; the only sure pollen indicator is a sensitized nose, and it would have been wiser to risk a few mild shocks; but the incident shows how ephemeral is the immunity to pollen unless it is maintained by the injection of pollen proteins or by their absorption through the nose.

SUMMARY AND CONCLUSIONS

1. Conditions of climate, soil, and cultivation in central Arizona are favorable to the prevalence of pollen disease.

2. The irrigated valleys have a continuous hay fever season of nine months. The common shade trees, cottonwood and ash, account for the first two months of this, and Bermuda grass, the chief offender, covers the remaining seven months, sharing the latter half of its period with the pigweeds. Minor

and local causes are rabbit bush, Johnson grass, and the saltbushes.

3. In the hill country, the main hay fever season begins in June with the pollens of the Rusisan thistle and the pigweeds. In August the bur ragweeds come on, much as do the true ragweeds in the East. Minor and local causes include the wormwoods, the saltbushes, and the western ragweed. Wherever Bermuda grass is abundant, it causes trouble all summer.

4. Northern Arizona, and northern New Mexico so far as that has been studied, have a similar arrangement except that Russian thistle is the chief hay fever plant, while the wormwoods take rank over the ragweeds.

5. Notwithstanding the diversity of vegetation, any given place in central Arizona has only three or four hay fever plants of local importance, and most of its hay fever from one or two of these.

6. To obtain good results it is necessary to employ in treatment that local pollen to which the patient has the heaviest exposure during the period of his symptoms, and the strongest skin reaction. Minor and group reactions may be ignored.

7. Because of the massive pollen exposure of this region, preseasonal treatment should be thorough, and should be continued up to or beyond the usual time of onset. In this series, such treatment conferred complete or almost complete relief on two-thirds of the patients who received it.

8. Treatment after the onset of symptoms produced equally satisfactory results, but extreme caution was required to avoid pollen shock.

9. Desensitization is ephemeral, and must be maintained either by the injection of pollen protein or by its absorption through the nose.

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THE DEPENDENCE OF SURGICAL PROCEDURES ON BIOLOGIC PROCESSES*

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The mechanical features of surgery have always been prominent. Too often surgical technic has dominated the whole situation. No matter how attractive the surgical technic may be, we should never lose sight of the most important feature of surgery, which is the relation of living tissue to surgical procedures. The reactions and changes that go on in living tissue may be considered biologic processes, and what peculiarly interests us is the manner in which these biologic processes are affected by surgical technic.

It is an old illustration, but one that sometimes is unheeded, that the surgeon who by careful application of his knowledge of wound healing can save a leg, is a far better surgeon than the one who is a more dexterous operator and can amputate the leg skilfully, but who is ignorant of the underlying biologic changes that occur in surgical diseases. Of course the ideal should be that the surgeon will be not only a skilful operator, but thoroughly imbued with a desire to understand and to apply biologic principles to his surgical technic.

Too often we of the medical profession confuse cause and effect in treating diseases. This is true not only as regards pharmaceutical remedies, but also surgical procedures. Accurate observation may clear the atmosphere and give a correct outline of the condition. It is well to remember that the patient is a highly organized mass of living tissue, and that every cell in his body will react in a certain definite manner to trauma or to disease. While a neat operation and beautiful technic are desirable, we should not be carried away with these features. The underlying principles of an operation should conform to the laws of physiology and of repair of the tissues that are affected by the operation. If we could only cease following blindly what some one says, merely because he says it, and adopt procedures because of reasons that may have a sound biologic foundation, we would doubtless do much more satisfactory work.

There are many instances in which a consideration of biologic processes throws light on the common procedures of an operation. Surgical drainage, for instance, is beneficial in certain cases, and harmful in others. It is often used indiscriminately. An appendicular abscess is always drained up hill, and usually gets well. An empyema in the pleural cavity, or an abscess in the leg, which may have identically the same bacteria, must be drained by gravity. It is well known that gauze drainage is beneficial in many septic cases, yet it rapidly becomes filled with serum which coagulates and forms a plug. What reason is there for this beneficial reaction?

We must resognize that the body has certain definite biologic defenses against trauma and disease. These defenses are often imperfect, but they usually are effective. Irritating substances in the stomach, bladder or rectum are extruded by special muscular contractions. Irritating materials in the nose or eye cause sneezing, spasm of the eyelids and an increased secretion which has a tendency to wash away the offending material. In other parts of the body, however, there is no muscular defense as there is in the rectum, larynx and bladder, but nature places her dependence upon throwing out a quantity of lympph and serum to wash away the offending substances. This is commonly found when, for instance, a boy sticks a splinter in his toe. If it becomes infected the toe "festers" and after a few days the discharge of serum and pus seems to wash the splinter to the surface. The infected splinter is removed, there is no further occasion for the pouring out of lymph, and the little wound heals rapidly. So in surgical drainage. In the

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abdominal cavity, for instance, the lymph supply is very great, and the pouring out of this large quantity of lymph along a drainage tract in an effort to extrude the irritating gauze or tube, tends to wash out the infection. The gauze seems to be more irritating than a tube, and consequently its beneficial action is often noted in drainage. In the pleural cavity or in solid tissue, where the lymphatic supply is much less than in the abdominal cavity, there is not enough lymph to wash out the infection satisfactorily, so the opening for drainage must be made with regard to gravity. These considerations of the biologic action of drainage in the different portions of the body may explain many seeming paradoxes.

The action of hyperemia in regard to surgical diseases or wound healing is interesting. The general effect of fear and anxiety on the changes in the bodily tissues has often been noted. Walter B. Cannon, of Harvard, has called attention to the effect of great emotional or physical strain on the circulation. The action of the sympathetic nervous system seems to be taken up by the secretion of the adrenal gland, and causes, among other things, a constriction of some arterioles of the body and a dilatation of others. Such a process, if temporary, may amount to very little, but if continued indefinitely would undoubtedly be pathologic.

Local hyperemia to a wound is often an indication of the amount of damage done either mechanically or by bacteria. More hyperemia is needed to produce healing in an infected wound than in a similar wound when there is no infection, because the white cells that have to do with repair also have the extra duty of fighting off the germs of infection, removing the debris caused by these germs, as well as the building up of tissue. Hyperemia, however, may not be an unmixed blessing, because if it is too great thrombosis may result and consequently there will be a lack of blood. On the other hand, if the blood vessels do not respond sufficiently to the needs of the tissue healing, the process of repair will be slow and here greater hyperemia is needed. Such methods are commonly used in the application of heat, and in the use of silver preparations and light caustics in chronic ulcers. The influence of hyperemia in tuberculosis has been frequently discussed. When tuberculous peritonitis with ascites is operated upon and the fluid withdrawn, hyperemia results, largely from the withdrawal of the pressure of the ascitic fluid. Such cases usually make a recovery, doubtless because of the hyperemia which results after the withdrawal of the pressure of the ascitic fluid.

Hypermia is not dependent solely upon the arterioles. Researches of Krogh, Hooker, Danzer and others show that the capillaries have a very definite and important function in hyperemia. Even though the capillaries have no muscular coat, the change in the size of the endothelial linings of the capillaries controls the amount of blood that passes through them. When we consider the enormous amount of space the capillaries represent, we can readily see the importance of such change.

In the treatment of threatened gangrene it was formerly thought that the circulation could be reversed by anastomosing an artery to a vein, thus causing the veins to take up the circulation. In a series of experiments we have made, however, we have demonstrated that this is an impossibility in any real sense. The arterial blood will flow down the large vein until it meets a valve in a medium sized vein. If this valve stands the arterial pressure for a few minutes, it will last indefinitely, and the blood is then switched off into the collateral circulation, and never reaches the extremity. The apparently good result is because the obstruction to the vein equalizes the circulation and causes the arterial blood that does reach the extremity to remain longer in the tissues and to give up more nutrition than it would if quickly drained off by an unobstructed vein.

Ligation of important blood vessels in young individuals or young animals is rarely followed by gangrene except in the lower brachial or in the popliteal regions. This is partly because of the elasticity and the adaptability of the vessels in the young. In the middle-aged and elderly, the lack of this elas-

ticity in the vessels must be taken into account. Here the methods that have been introduced by Halsted and by Matas, or producing partial constriction of the vessel, as by an aluminum band, for several days before complete ligation, establishes a collateral circulation that might be impossible in these patients if there were a complete stoppage of the blood without any such preliminary preparation.

In the preparation of a flap for plastic surgery, if the flap is dissected free and transplanted at once, too great a strain is placed upon its blood supply. If, however, it is dissected only partly free at the original operation, and then freed in stages later on, ample time is given for the development of the blood supply through the pedicle, and no gangrene will result.

Such a procedure is important not only because of the avoidance of gangrene, but because connective tissue is more prone to arise where blood nutrition is feeble. Consequently a good blood supply will probably mean a lessened amount of scar tissue, and a better cosmetic effect from the surgery.

Operations upon the stomach have frequently been done without regard to the underlying physiologic principles. There is no one operation that can be satisfactorily applied in all the different lesions of the stomach. Much depends not only upon the lesion, but upon its location and extent. Gastroenterostomy with an open pylorus, for instance, is often followed by unfortunate results. The mucosa of the jejunum is accustomed to alkaline contents, and has no biologic resistance against a continuous supply of acids. Therefore when a gastroenterostomy is done with an open pylorus, the constant passage of the gastric juices through the pylorus lowers the alkalinity of the duodenal contents, so that it in turn cannot protect the jejunal mucosa against the acid of the stomach that comes through the stoma of the gastroenterostomy. When, however, there is practically complete stenosis of the pylorus, the alkalinity of the duodenal contents remains high and can overcome the acidity of the gastric juice at the stoma of the gastroenterostomy, and so will protect the jejunal mucosa. The application of this general principle should also be made in other operations on the stomach, such as the "Y" method of gastroenterostomy or an anastomosis of the loops of the jejunum around the gastroenterostomy. All of these procedures deprive the mucosa of the intestine that is adjacent to the stomach of the protection of the alkaline secretion. Mann and Williamson, in recent experiments that have been reported in the Annals of Surgery for April, 1923, have shown that when in dogs a portion of the intestinal tract accustomed to alkaline contents is joined to the stomach, and the protecting alkaline contents of the duodenum are sideswitched, peptic ulcers develop in a vast majority of cases.

This is merely according to our common knowledge of the physiology and biology of tissues. If a fistula was made from the jejunum to the abdominal wall, we would not marvel at a dermatitis or ulceration of the skin that would result. This merely means that the skin has no proper defense against such an unusual condition as exists in the constant contact with the succus entericus. The skin may be perfectly healthy and fitted to fulfill its normal function. On the other hand, if the mucosa of the jejunum were in constant contact with a rough flannel undershirt, we would of course expect erosions.

The use of large metal plates in bone surgery is in direct opposition to the rules of nature. Merely because a piece of wood can be held in position by spikes, nails and metal plates, it has been assumed that such procedures are applicable to living tissues. Irritating substances in bone, such as a screw, no matter how tightly applied, will become loose. This is because nature, in her effort to get rid of this offending material, will cause an absorption of lime salts to loosen it and will later wash it out as far as possible with lymph or serum. Such a process produces osteoporosis, which is just the opopsite of what is needed in the repair of fractures. Consequently, we find numerous instances of ununited fractures after the application of a Lane plate, which

produces biologic reactions in the bone that tend to delay repair.

A knowledge of biologic reactions may be applied with much benefit to the treatment of certain types of malignancy. Basal cell cancer, or the old rodent ulcer, shows a constant peculiarity in that it does not metastasize, but extends only into the tissue which borders upon the basal cell cancer. It does not seem probable that this failure to metastasize is due to the lack of entrance of the basal cell cancer cells into the lymphatics. These cells are comparatively small in size, and should gain access to the lymphatics as readily as does the spinous cell type of squamous cancer. They are probably transported by the lymphatics but are unable to grow at a distance from the region of the cancer. In other words, there appears to be something in the metabolism of the tissue around the basal cell cancer which breaks down the resistance to this cancer. In several cases we have utilized this biologic principle by first excising the cancer, preferably by the electric cautery so as to prevent implantation, and then transplanting a flap at some distance from the cancer, where the natural resistance to basal cell cancer is unimpaired. In five cases of this operation the results were satisfactory in all except one, and in this patient there was a recurrence because the growth involved the antrum, and in an unwise effort to secure cosmetic results while treating the cancer, part of the flap which was turned in had the epithelial side in contact with the raw surface. This of course did not afford the protection that the raw surface of the flap gives, and recurrence occurred at such points. Wherever the raw surface of the flap was placed upon the raw surface left by excision of the cancer no recurrence occurred.

In the other patients care was taken to approximate the raw surface of the flap to the wound more accurately, and there has been no recurrence at any point within the region of the flap. In another instance, however, when a flap was transplanted for cosmetic effect, after excision of a spinous cell cancer, the type which frequently metastasizes, there was recurrence and the cancer grew readily into the flap.

In transplantation of organs or in skin grafting, biologic laws are exceedingly important. Skin grafts from one individual to another rarely take permanently. They may appear to live but sooner or later are replaced by scar tissue. Transplantation of highly developed organs, such as the kidney, from one lower animal to another is always an eventual failure. The fine biologic differences in tissue fluids, which cannot be determined chemically, sooner or later cause such operations to fail.

These are a few illustrations of the applications of a knowledge of biologic processes to surgical technic. Such instances are found every day in the work of the busy surgeon. True progress in surgery will depend largely upon the study of biologic principles and their application to surgical treatment.

THE PROGNOSIS AND TREATMENT OF CHRONIC ARTHRITIS*

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This paper is based upon some experiences with arthritis in the army since my attention was directed to the many cases which were found in the service shortly after the late war, first at a large general hospital near Chicago and later at a special hospital at Hot Springs, Ark., where arthritic patients are collected in large numbers.

It was at the Army and Navy General Hospital at Hot Springs, Ark., that an opportunity was afforded to study these conditions in better detail and to attempt to form some conclusions. It is evident in studying patients who are chronic sufferers from this disease, that much more might be done to correct conditions in some of them than has previously been at-

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tempted. A survey of the important things that should be done in these conditions seems never amiss. If these things can be shown to be helpful, they should become of more universal application earlier in the disease. Time is of the greatest importance in treatment, and neglected cases may offer the profession much cause for reproach.

Hot Springs is one of the famous health resorts of the country and patients of all descriptions, especially those who have joint diseases, flock to the baths in the Hot Springs National Park. The government has an old established and a well-equipped hospital at this location, known as the Army and Navy General Hospital. To this hospital come many patients from the Services, the Army, the Navy, the Marine Corps, the Veterans, and certain civilians who may be sent there. It was founded as a hydro-therapeutic institution, one of the first in the country.

While on duty at this hospital one morning, a Louisiana school teacher came to my office for advice. She had developed a mild arthritis of the fingers, of the variety known as Heberden's nodes. She had gone to a physician in Hot Springs, who had told her she had arthritis deformans. She had then hunted up an encyclopedia and had looked up the disease, where she had learned that patients with this disease were incurable, and that from a slow beginning, the disease spreads until all the joints are affected and the patient becomes hopelessly crippled and bed-ridden. Of course she was thoroughly alarmed and had come to a government hospital to secure what reassurance she could. The physician whom she had consulted was probably correct in his diagnosis, but the patient, a wage-earner with a mother and others dependent upon her earning capacity, was needlessly alarmed. And yet that is the picture we have in our minds of arthritis deformans; a hopeless, terribly deforming condition, for which little or nothing can be done. In my estimation, that is not the correct picture, for the ordinary case goes on to healing, and can be healed before that terrible end-stage is reached. Unfortunately, there are still cases for which we appear to be able to do nothing, but these are not the usual ones. You remember that J. B. Murphy, when he was discussing back injuries, the lumbagos, the acute or chronic back sprains, called attention to the fact that most of these patients could be shown to have arthritic changes in their spines or other joints, and you know that even considerable changes in the spine may be compatible with a reasonably good state of health.

Acute rheumatic fever is supposed to be a specific disease caused by a specific organism identified by Billings and his helpers in the majority of early cases of the disease. The mode of infection is believed to be generally hematogenous, from the blood-stream into the terminal small arterioles which end in the joint tissues. From here the organisms are carried through the tissues and into the joint fluid from which a spread over the interior of the joint goes on, leading to tissue proliferation with the resulting changes of the disease. These cases are supposed to get well without the resulting damage to the joints. This is mentioned only to emphasize the difficulty of diagnosis. In reading histories of chronic arthritis patients, one is struck by the frequency with which the diagnosis of rheumatic fever had been made, only to have the patient not get well, but develop chronic arthritis. The mode of infection in the arthritis of the chronic patient must be similar to that of the acute variety, and I am doubtful of the possibility of being able to tell where one leaves off and the other begins. The skin nodules, which were once supposed to be diagnostic of the rheumatic fever alone, are now known to be found in chronic infections also. The same symptoms which lead to a diagnosis of rheumatic fever may be found in chronic arthritis, and gonorrheal arthritis may give a similar picture with

polyarthritis, high fever and acid sweats.

The fact that these conditions form a group so hard to differentiate from each other makes it interesting to attempt to separate chronic joint conditions into different varieties. When one attempts to do this, the similarity of a great number of them becomes apparent, and the role of infection becomes a more and more important problem. These, it seems to me, are the conclusions that any fair-minded observer will reach. My own conclusions are more than strengthened by those of Thomas McCrae, from whom I make the following quotation: "As a practical problem, therefore, what we are concerned with is the effect of some infectious agent on the joints. With this, two facts should be kept in mind, one that the same organism may be responsible for many different forms of arthritis and the other, that different organisms may cause the same changes. In other words, we maw say that an infectious process causing arthritis has no specific effect as a rule. There are some exceptions to this; Thus the arthritis set up by the gonococcus may show features which are fairly characteristic. But it is rarely safe to trust to this in making an etiologic diagnosis." McCrae's conclusions are based on a large service and he is able to speak with authority, so that I may borrow from him a little further.

The usual classification of joint infection is as follows:

Acute: Rheumatic Fever
Chronic: Rheumatoid Arthritis—the periarticular variety
Osteoarthritis—the hypertrophic variety.

We are not discussing the acute variety. It is difficult to maintain the usual classification of the chronic variety because the patients do not group themselves well into these two classe. In the periarticular form, the bony and joint changes are largely in the form of atrophy and in the other, they are of bony deposits. But frequently we find the same changes in the same patient, and, as McCrae says: "They appear to have the same etiology." They both appear to depend upon infection. For this reason the term "Infectious arthritis" appears not to be a good one, because the conditions are so largely due to infection. McCrae classes all the chronic arthritis cases as arthritis deformans. I remember that when I was an interne I once tried to teach some students the difference between arthritis deformans and chronic rheumatism, and now I begin to see why I was so unsuccessful.

The question of metabolic etiology in arthritis is certain only in the case of gout. We know that to be a relatively rare condition. The influence of metabolism in other forms of arthritis is still too uncertain and there is so much that is doubtful in the relation of the metabolism to etiology, whereas there is so much that is certain as regards infection that one must be very cautious about ascribing any certain arthritic condition to a faulty metabolism. There are certain forms of the disease where it is of the utmost importance to attempt to discover more potent methods of attack for cure, and metabolic study and research now going on is honest and necessary. At present, however, treatment for chronic arthritis must be based foremost and directly on infection as the cause of the disease.

In a consideration of the classification, the various forms of arthritic conditions which have received special names must be looked upon as varieties of the same condition. Still's disease, a polyarthritis of children, is regarded as only a variety of chronic arthritis. In the same way, the various forms of spondylitis described are probably similar conditions with varying types and degrees of deformity.

My remarks are based directly on 165 cases of undoubted arthritis which were seen at the Army and Navy General Hospital, from November, 1920, to May, 1922. They are selected from a much larger group diagnosed as arthritis. All cases of doubtful nature or in which definite joint pathology could not be easily determined,

are excluded, and the ordinary mild joint affection seen in the aged is also eliminated. In this way, many cases showing fibrositis or myositis, somewhat similar conditions, have been passed over, because it was desired to ascertain the improvements that appear definite in definite joint conditions under more or less conservative treatment. The ages of the 165 patients vary from young to old. All were in men. Of these, the following classifications were made.

Classification of 165 cases of Chronic Arthritis

1. Infectious:	A. Specific.	Gonorrheal	25
		Syphilitic	2
		Tuberculous	4 (one combined)
		Typhoid (none included. Added to show possibility.)	
	B. Non-specific—		
	Due to local infection		78
	Probably focal infections		15 (Type following infectious disease.)
2. Unknown origin			38
3. Metabolic;	Gouty		1
4. Traumatic			2

Of the cases included in the table above, we will not discuss the tuberculous nor the traumatic. These two cases considered traumatic were both in single joints (knees) which had been subjected to repeated injuries. They were not infectious as far as could be determined. It must be remembered that many arthritides follow injury, the injury acting to produce a point of entrance for the infectious agent. Such cases are considered infectious. The syphilitic cases will not be directly discussed. This is a rare condition and the two cases in my series were ones in which, after the ordinary treatment for arthritis had failed, anti-syphilitic remedies acted with almost unbelievable rapidity. They were regarded as true manifestations of syphilis. The gonorrheal cases are included in the study because they are so numerous, so apt to be confused with other forms of arthritis, and, because they are similar in their etiology and may even be considered forms of focal infection. They are also included to show the difference as regards healing.

Those cases included in the headings as probable focal infections have histories which show as follows:

Followed vaccination
Followed abscess of chest with pulmonary tuberculosis
Followed mumps
Followed typhoid and meningitis
Followed influenza with diarrhea
Followed dysentery
Associated with chronic bronchitis
Aggravated by influenza
Followed typhoid
Followed cold in head
Followed tooth troubles
Followed sore throat

In the cases mentioned above, it was not possible definitely to fix an actual focus of infection, but the origin of the cases showed similar onsets following some infectious disease, or associated with some condition that makes us think directly of a focus present in the body and lighted up at that time. If we had been able to see those patients at the time they were first taken sick, we should probably have been able to find that focus, at least in a good many cases. Many of these patients were seen many months after the original onset.

Among the group for which no direct cause could be found, were many who had previous arthritis, the number amounting to 40% of the 38 cases. It is interesting to see how these facts appear, as shown in the list below.

Rheumatism since 1910 when he had chorea.

First trouble 1911; again in 1913 and 1920.

Inflammatory 1914; returned 1919.

Swollen knee following wound 1917; both knees 1918.

February, 1920. Recurrence September, 1920.

First 1898. Several times since.

1917. Recovered. Again 1918.

Swelling knee 1908. Recurrences 1909, 1912, 1917, 1920.

Rheumatic fever, 1908. Returned 1918.

First arthritis 1879-1880-1882. Recovered. Returned 1920.

1919. Recovered. Again 1920.

1919. Recovered. Acute attack 1921.

1919. Recovered. Again 1920.

Such recurrences as shown in the list given, make one think of a lowered resistance making possible a recrudescence of an infection which is present in the body in some focus which is not healed. In the same manner, of those cases in the present classification definitely considered to be due to focal infection, of 78 cases, 11, or 14%, had had previous arthritic trouble. These indications are enumerated because they are all indications of infection as the cause of these conditions. Some of these arthritides date back for years when we did not realize the nature of focal infection, and many of the patients had not had the searching for sources of danger that would be given such patients today. Most of the patients in whom actual original foci could be found were seen in the early months of the disease. Emphasis should be placed on this point, that the closer one searches in the arthritic conditions, the greater the probability that infection will be found as a cause.

As previously stated, it is my belief that the majority of the ordinary cases of arthritis tend to heal at some time or other, generally without producing the serious end-results so much dreaded. In some cases, there appears to be no evident attempt on the part of nature to heal the condition and these cases are considered progressive. It goes without saying that the more evident the infection as the cause, and the more prompt the removal of the cause, the better chance there is for healing without serious damage to the joints in the nature of either disorganization or ankylosis. In our cases many were found to be carrying foci of infection which they had had for months, and many were in aggravated conditions. All were chronic and difficult cases, because they would not have reached Hot Springs had they been simple or easy to heal. Some had gone through many clinics, and had been seen by many physicians. It was thought that this group which appears to offer a larger percentage of discouraging cases than would be seen in the ordinary clinic group, will give some idea of the ability of the body to restore or improve the condition, and so represent the natural tendency toward healing. All of this is difficult of exact estimation because of the various factors concerned, but there appears to be a general tendency which is common to the cases showing the same type of arthritis, and appearing to have the same etiology. These groups are classified below.

Table Showing Tendency Toward Healing:

	Focal Infections	Probable Focal Infections	Unknown Origin	Gonorrheal
Healing	46—(59%)	6—(40%)	19—(50%)	(20—(80%)
(Slow or				
(Stationary	29—(37%)	7—(47%)	15—(39%)	4—(16%)
Progressive	3—(4%)	2—(13%)	4—(10%)	0—(0%)

Not counted 1—(4%) Case of too short duration. No observation.

In the above table, the three first groups all contain cases of similar nature though, in some of them, it was not possible to definitely fix the infective cause for the arthritis, and we have indications that healing takes place after a shorter or longer time, in much the same percentages and that the progressive cases are much in the minority, and are encountered fairly consistently in the different groups. In the gonorrheal cases, however, there is a distinctly larger percentage of healing cases and an absence of progressive cases; in other words, this is a more favorable condition.

Foci of Infection were found in the following numbers:

Tonsils	42
Tonsils and teeth	13
Teeth	7
Bladder	2
Tonsils and ear	1
Tonsils and urethra	1
Tonsils, teeth and bladder	1
Tonsils, ethmoid and skin	1
Tonsils and bronchi	1
Teeth, rectum and ear	1
Tonsils and pleura	1
Kidney	1
Gall bladder	1
Ear	1
Appendix	1
Skin and tissues	1
Pleura	1
Ethmoid	1

PROGNOSIS

As stated above, and as shown by our table of comparison, the gonorrheal form of arthritis is the most favorable. These cases may be expected to recover. Destruction of joints is rare, and none of the cases were progressive in nature. The atrophic form is the most difficult. In this condition, the onset is usually very gradual with little or no fever; the disease is very chronic and without much inflammatory reaction. It is in this form that the joint cartilages are slowly eroded with resulting loss of fixation of the joint, and then dislocation. With this there is an increasing ankylosis as the joint process subsides.

Spondylitis in the lower spine is not as serious as that higher up. Patients may enjoy good function with rather extensive changes in the spine. Treatment has a direct bearing on prognosis, for the earlier the treatment, the better the possibility of complete or good restoration. Even after longstanding arthritis, in some cases, careful, systematic treatment may afford a return to a productive life. The danger to life is not great, unfortunately so in the case of the progressive varieties. It has been mentioned more than once that the majority of the cases are considered relatively hopeful, much more so than we have usually been apt to feel.

Complications, in order of their fre-

quency, in the series of 165 cases, were—

Cystitis	4
Nephritis	4
Mitral insuffiency	3
Chronic bronchitis	3
Pulmonary tuberculosis	2
Syphilis	2
Otitis Media	2
Vascular hypertension	1
Cardiac hypertrophy	1
Ascites and edema	1
Torticollis	1
Myocarditis	1
Uncinariasis	1
Acidosis	1

Some of the above are sources of infection as well as complications.

TREATMENT

The first essential in treatment is time. In this disease there is a similarity to tuberculosis, in that both conditions require long continued care and proper surroundings in which to apply that care. If the physician will bear in mind that, even after the foci of infection have been found and removed in these cases, there is still required very careful treatment and plenty of time to restore the patient to full or optimum health, much good will result. It is essential that the physician have the best possible opportunity to treat the patient, and that means in all the details of time, full control and surroundings. Such a patient is much better off in a sanitarium than in a home. He is much better off in such a sanitarium as understands the chronic patient and his needs. The benefits of hydrotherapy and physiotherapy are many, and, wherever possible, the patient should have the benefit of them, just as we advise the tuberculous patient to have the benefit of careful sanitarium treatment.

The need of constant observation and control of such a patient is due to the fact that the zone between improvement and retrogression is often very narrow, and the little things that govern, too much exercise, too much or too little food, too severe or too little treatment, may make the difference between getting well or getting worse. The ideal place is the sanitarium. This is a better place than the general hospital. The hopeful outlook and the will to get well are important, and the patient who takes to his bed and passively awaits the miracle to happen, has a more difficult road than the one who actively fights to get out of bed and to get well. Diversion and occupation, in so far as they are possible, are important measures in preventing the introspective tendency which is so harmful to the chronic invalid.

The first important measure in the actual treatment is the search for and the removal of the source of infection. It must again be emphasized that the earlier the removal, the better the outlook. Even when the primary focus has been found and removed, there may be secondary foci in the lymph glands about the joints, and in the joints themselves. These cannot be removed surgically, but for these we must depend upon the resistance of the body to overcome infection that is systemic. After foci have been removed, it is sometimes surprising to find that another focus has developed, generally in the teeth or possibly in the remains of a tonsil. For this reason, we must always be on our guard not to take things for granted.

It appears to be the best practice to keep the nutrition up to normal, as far as possible. Most of these patients are undernourished. Sometimes one is over-nourished. Unless there are particular conditions which make it impossible, a liberal diet is best. The gluttons should be restrained. There is no good reason why liberal protein should not be given, and it is unnecessary, as some physicians do, to forbid red meats. This relic of dietetics must come from the idea that all these patients were gouty, although there is no evidence that purin bodies are harmful in chronic arthritis.

Pemberton has ascribed the beneficial effects of the therapeutic agents used to an increase in the body metabolism. He is engaged in research to determine just what these effects are, and at present, it is sufficient to use

those measuers which have proven of value in the hands of many clinicians. Such measures are heat, vaccines, bathing, massage, arsenic, light, x-rays, exercise, etc. Heat is the most universal remedy used, and this may be applied in many forms. Hot baking is convenient, accomplished by the electric baker, or by hot sand or other means. This is, of course, one of the best means of relieving pain in inflamed joints. Prolonged hot bathing is not necessary, and by many is regarded as useless. At Hot Springs we found moderate heat in short baths most advantageous, especially if used as a preliminary to massage. It should never be carried to the point of exhaustion or fatigue, but should be relaxing and pleasurable. Hot baths should be followed by cooling and rest.

Billings ascribes the great benefit of massage to the necessity to restore circulation about the joints, especially because the terminal arterioles are plugged with bacterial emboli and their products. Massage helps to bring fresh blood into these blocked vessels, and so to supply nutrition and to relieve the locality of some of the infection. At any rate, massage done daily, if possible, is one of the most potent measures for joint restoration. Passive motion is helpful in the later stages. One must be careful to avoid motion in the acutely inflamed joints which will be sufficient to aggravate the condition and extend the infection. One must use surgical principles here. Movement up to the point of increased swelling and pain are desirable, but it is very easy to overdo this and negative the advantage of rest in such acute conditions. Rest is the body's chief restorative agent. next to the innate mechanism of immunity, but even rest can be overdone. When the inflammation and the infection begin to be quiescent in the joints, exercise and passive motion should be begun and increased to the point of tolerance, and the latter must be determined by the condition of the joints from day to day. Splinting of forearms or of other joints, as so often done, must be very carefully watched for the following reason. All these joint infections are accompanied by a marked atrophy of muscle, partly from disuse, and partly, probably, from toxic, trophic, or other action, and it is very easy to exaggerate this atrophy by splinting. Attendants are apt to bind the parts too tightly and to predispose to atrophy and ankylosis. It is much more difficult to restore the function of the joints unless they are kept mobile. Therefore, if splinting is done, it should be carefully watched, lightly applied and removed as early as possible. Even when splints are applied, they should be regularly removed for massage and other treatment directly to the joints.

When the joints have healed with fibrous ankylosis, much can be done by systematic exercise of a corrective nature. Apparatus of the Zander type and special exercises will be needed. The orthopedic surgeon is of the greatest help in this condition, and his aid should be sought. Active manipulations under anesthetics are often necessary, along with extension or other apparatus to overcome muscle spasm and contracture. It is essential that manipulations of joints to promote motion be done only after the active process has subsided; otherwise the condition will be reactivated and healing will be just that much delayed. Villous arthritis, a condition in which the interior joint surfaces are thickened and surfaced with prolongations of the membrane into villi like projections, is often treated surgically by the removal of the redundant membrane. Bony ankylosis may also be treated by the surgeon for the formation of new joints. The surgical treatment of the gonorrheal lesions in chronic vesicle infections is aided by vas puncture and injection.

A change of climate may aid in the treatment. Hot and dry climates are better for this class of patients than the cold and damp ones. Sunshine is especially desirable for the patient's sense of comfort, and the cheer of the pleasant weather does much for him. It can not be said that climate in itself is curative. Treatment by the

active sun's rays is probably not of great value, except as a tonic agent. The out-of-door life, as far as compatible with the condition is helpful.

Vaccines made from lesions found have not proven of great value in the hands of most men, and stock vaccines appear to be relatively useless. In one case of chronic bronchitis, autogenous vaccine was distinctly helpful. They should be tried where indicated, but too much reliance should not be placed on them.

Non-specific protein has proven of great value. Most clinicians are cautious about the use of this intravenously, and many warn against it. Subcutaneously, it does not appear to have any danger. We have used typhoid or paratyphoid mixed vaccine subcutaneously in small doses at intervals of one week to ten days with great benefit in a number of cases. In my opinion, the dose should be kept rather small, just enough to give a mild or moderate reaction, such as one expects from its use as a prophylactic. I have not used more than 1 cc. at a dose. Even in gonorrheal arthritis, this often acts to accelerate a cure after other methods have failed. In the stubborn, indolent cases, typhoid vaccine is often enough to turn the scale towards recovery.

The medicinal treatment of chronic arthritis should be a common-sense one. The anemia is helped by the usual remedies to meet that condition. Anorexia may be stimulated by tonics. I have found whiskey or other alcoholics to have a good effect in this way. Constipation should be treated when present, and sufficient intake of liquids should be encouraged and enforced. Salicylates have a marked effect on the pain, although caution should be exercised to avoid damage to the stomach. Aspirin, if given with plenty of fluid, will not be harmful. If large doses of salicylates are to be given, the rectum is the best method of administration. I have not been in the habit of using stronger pain relievers. It is well to avoid hypnotics. This is not a disease that requires a large amount of medication and it is much better to err on the side of moderation.

In conclusion, emphasis is again laid on the necessity for the following points to be cared for above all others.

1. Early diagnosis.
2. Early removal of all foci of infection.
3. Careful daily control of the patient for a sufficient time.
4. Good common-sense treatment all the way through.
5. A hopeful outlook and a hopeful attitude toward the disease.
6. Special study and care of the difficult case.

TYPE AND TOPOGRAPHY IN TUMOR PROGNOSIS*

ARTHUR E. HERTZLER, M. D., Ph.D. LL. D., F. A. C. S., Halstead, Kansas.

Statistics relative to the prognosis of tumors after operation mostly have been compiled to emphasize the value of some type of operation. If the results have been favorable the type of operation performed by the surgeon is given all the credit. These statistics present no data which make a judgment of the types of tumors treated possible. If carcinoma of a certain region is under consideration they are all considered as an entity. Nothing appears in the statistics to permit one to judge the stage and type of the tumor. Furthermore, those who have had much to do with hospital pathology and pathologists know that even the question of malignancy is not always definitely established. An untrained pathologist, salaried by an operating surgeon, may perhaps be pardoned if he does not scrutinize too closely borderline cases operated on by his chief. Many cases reported as cures by operation are found not to represent malignancies

(**Read at the Forty-First Annual Meeting of the New Mexico Medical Society, at Albuquerque, N. M., June 20, 1923.*)

at all. Even trained pathologists have trouble enough in properly classifying tissues presented them for deliberate study. It is easy to understand, therefore, that the inexperienced pathologist, particularly when laboring under stress, perchance with frozen sections in the operating room may easily err. It is a secret of the specialist that when in doubt in such cases it is best to diagnosticate malignancy. Lost tissues tell no tales and if a diagnosis of malignancy is made and the patient remains well both patient and surgeon are happy. Taking liberties with the facts in such cases is almost as respectable as overestimating the weight of a newborn babe.

But statistics based on such work gets nowhere. In order to secure reliable data for the determination of the prognosis of a given type of tumor, case reports should be complete enough to enable the reader to determine for himself the type of tumor in question and the stage to which it has developed at the time of the operation. This in most cases will require the close association of pathologist and operating surgeon. The surgeon must know the difference in disposition of tumor of like structure when occurring in different topographic regions, different ages and different types of patients. There is nothing in the structure which will enable the pathologist in many instances to determine these facts. A complete history of the disease and the physical findings prior to the operation are as essential to the pathologist as to the operating surgeon. The microscopic findings are of minor importance. It is only when tumors of like character, in patients of the same age and physical constitution, and in like stage of development are classed together can one secure a basis which will permit a judgment as to the value of any therapeutic measure.

It is the purpose of these remarks to discuss, in brief way, some of the factors which must be taken into account by the surgeon in each case before he can consult the pathologist with profit. All tumors in all situations involve this line of study in a greater or less degree, but a few of those most easily presented in didactic discussion will be considered.

The epithelial malignancies of the face present the most elemental problem. Everyone knows the relative benignancy of the basal celled tumors of the cheek and temple, as compared with the marked malignancy of epithelioma of the lip. It is not generally appreciated, however, that each of these tumors presents in its own class a great variation. For instance, once the basal celled epithelioma of the cheek reaches mucous membrane they become violently malignant. For instance, when such a tumor reaches the tear sac or the nasal mucosa, a cure is well nigh out of the question. Therefore, when such a tumor approaches a mucous membrane it must be destroyed without regard to the ultimate cosmetic result.

Tumors of the lips present a varying degree of malignancy. The flat superficial keratotic variety usually are cured by any destructive procedure, cautery, x-ray or surgical removal. The papillary, fissured or ulcerative type are more serious and even with early complete destruction the prognosis is grave. In young persons the outlook is hopeless no matter how early or complete the removal. The nature of the metastasis after such has occurred, proclaims even more definitely the outlook. The small, hard, shot-like gland metastasis proclaims a slow growth. The diffuse, periglandular infiltration, presenting the appearance of woody phlegmon denotes a condition which no treatment will ameliorate or retard. No degree of neck dissection is of much benefit in lip carcinoma no matter what the stage or type. I have never cured a lip carcinoma once metastasis in the neck had occurred. Therefore, the whole effort must be expended on the destruction of the initial lesion and the type of tumor and the age of the patient determine the prognosis and the efforts of the surgeon, beyond that of complete local removal, determine the subsequent course. Once we know the great importance of lo-

cal destruction we may lend our energies toward making this complete. The destruction by cautery is perhaps the most efficient means. After complete healing has taken place a plastic operation may be performed to remedy the defect. Once neck metastasis has taken place the question of time rather than the nature of the outcome is the problem at issue. It is permissible to do a block dissection. It may retard but likely will not cure. The x-ray likewise, may secure temporary abatement.

Carcinomas of the tongue and floor of the mouth depend on the age of the individual and the rate of development of the tumor. In slowly developing tumors in old persons the prognosis is fairly good after complete destruction by cautery. The more superficial and slowly growing the tumor and the older the patient the better the prognosis. In young persons, particularly the corpulent, recurrence is certain and sure.

Tumors of the breast present the most difficult problem of all tumors to classify and prognosticate. Certain fairly definite rules may be formulated however. The younger the person and the more rapid the development of the tumor the more unfavorable the prognosis. In women under thirty the prognosis is uniformly bad. The same may be said of carcinoma of the lactating breast. True there are some cases of cure reported after operation for the latter but no one has the right to ask acceptance of his bare statement of fact. Periacinal inflammation in the lactating breast so closely resembles malignancy of the lactating breast that it cannot be distinguished clinically and the laboratory diagnosis tries the skill of the experienced pathologist. Such reports should be accompanied by complete pictorial histological data. Carcinomas in buxom matrons at the menopause period give an exceedingly grave prognosis, no matter how early the diagnosis or how radical the operation. Old and thin women, on the other hand, give a very good prognosis even with simple amputation. The vast difference in prognosis between those who have lymph gland metastasis and those who do not is generally correctly recognized. Once lymph gland metastasis has occurred the prognosis is very grave and once the supraclavicular glands are involved the prognosis is all but hopeless and the problem becomes one of the maximum prolongation of life by radiation. The type of tumor has something to do with the outlook. The large bosselated tumors that tend to protrude through the skin, being usually colloid in character, give a relatively good prognosis. The small scirrhus when slowly growing follow next. The rather diffuse type with a small amount of stroma and differences in size of the cell are very malignant. Those which develop on interstitial mastitis or senile parenchymatous hypertrophy give a prognosis in harmony with the age and physical type of the patient, according to the rules already expressed. In young persons these are uniformly fatal. In this type of tumor the clinical pathologist often allows himself a large amount of leeway calling malignant those in which the acini are filled with epithelial cells or there is much round celled infiltration. When this is accepted the operative results are of course good. Despite the fact that most recurrences occur in the skin there is great stress laid on the wide removal of fascia and muscle. Particularly in the scirrhus type the skin must be removed over a wide area.

Tumors of the digestive tract give a varying prognosis. Carcinoma of the esophagus is quite hopeless. Among other difficulties are those of securing union of a gut tube which is devoid of peritoneal covering, lacking as it does the fibrin forming elements of the subperitoneal tissues. At the present time operation for the removal of carcinoma of the esophagus must be regarded as a justifiable technical stunt rather than a curative measure. Carcinoma of the stomach presents all but a hopeless proposition. Operators presenting long series of cures after resection for carcinoma of the stomach a few years ago soft pedal their remarks now. Fail-

ure to distinguish between indurated ulcer and malignancy lead in many instances to the proclamation of favorable operative results wholly unwarranted. The clinical judgment is uncertain and even the deliberate study in the laboratory may leave the examiner in doubt. Few surgeons of experience would venture to express the optimistic opinion current a dozen years ago. The more deeply one studies the problem the fewer cures he registers. The disease is not utterly hopeless but one must again individualize. In the young the disease is always fatal. With great emaciation without stenosis scarcely less so. Metastasis in the lymph glands equally so though if the extension is not beyond the first row of glands prolonged freedom may be obtained by resection. It is the slowly developing colloid tumors which are easily palpable and freely movable that give the best prognosis. When protruding fungus-like into the lumen of the stomach a fairly good prognosis after operation is justifiable.

Carcinomas of the small gut, being slowly growing, annular erosions, with contraction, give a good prognosis. Carcinomas of the cecum and rectum give a relatively good prognosis. The cecal tumors often call attention to their presence by constriction fairly early. This together with their relative lymphatic isolation and the ease with which an abundant extent of gut can be resected make for complete removal. Rectal tumors give a prognosis according to their type. The fungating type which produces early bleeding and obstruction, lead to early diagnosis. This, together with the fact that the growth is away from the surrounding lymphatic tissues, give a very good prognosis. In my experience this type of tumor in this situation gives the best prognosis of any major epithelial malignancy. The type of rectal carcinoma that ulcerates and tends to invade the surrounding tissue gives a less favorable prognosis because the diagnosis is made relatively late and because the surrounding lymph glands are invaded earlier.

Uterine tumors are notably of varying malignancy according to their location. Those of the fundus give a prognosis almost uniformly good. The reason for this is that the majority classed as malignant are not really so but are merely endometral hypertrophies. Carcinomas of the cervix are seldom cured. Cervical erosions when treated as malignancies of course remain cured. I do not believe I have ever cured a real carcinoma of the cervix. Endotheliomas often remain subdued for many years but they kill the patient sooner or later. Those who do radical operations with a high operative mortality have much to account for. So able an investigator as Emil Ries has secured cures but this achievement has been denied me.

There is a type of tumor occuring on the trunk which requires a correct understanding in order to secure favorable results. These protrude as glandular tumors, firm, elastic in consistency and are covered by a thinned, reddened skin. These tumors are often fibrous in structure but unless removed, along with the surrounding tissue, are almost certain to return. If merely shelled out the result is disastrous.

The case of the common testicular tumors, the mixed tumors, show the confusion names may cause. The mixed tumors of the parotid are uniformly cured by operation, those of the testicle are regularly fatal. The term relates to the alleged embryonic origin and indicates no similarity in structure or clinical disposition.

There is a group of tumors affecting the abductor muscles of the thigh which vary from apparently simple lipomas to frank sarcomas. They are sometimes globular or lobulated but as frequently show interdigitations which extend in the clefts between the muscles. These prolongations are easily overlooked and account for many apparent recurrences. The myxoid and the sarcomatous must be removed together with the surrounding fibrous tissue to the remotest extent of any prolongations or recur-

rence will most certainly take place. Pure lipomas also should be completely removed lest a prolongation be left behind and result in a new tumor. There is no group of tumors that so well repay a careful dissection as these tumors of the abductor region of the thigh.

Closely associated with the foregoing are those of the popliteal region and of the calf. Tumors occur here, composed wholly of pure fibrous tissue which carry sparse spindle form nuclei; in many regions of the body they could be considered wholly benign, but here, unless removed together with the capsule, they result, in local recurrence and often with distant metastases.

There occurs a deceptive type of tumor which involves chiefly the lower extremity. These may appear as small fungoid or ulcerous lesions, most commonly pigmented, which look innocent enough but which are seldom if ever cured by operation. They extend up the lympathics and may often be detected by a cord-like thickening, with enlargement of the inguinal lymph-glands. These I have called melanoblastemas indicating a genesis separate from carcinomas and sarcomas. These tumors, innocent as they often seem, recur regularly no matter what the treatment. The differentiation from benign lesions is not always easy.

Thanks to the tireless labors of Bloodgood the tumors of bones are now generally understood. These studies may be taken as an example of how all tumor groups should be studied, if we are to secure reliable data upon which to base our therapeutic endeavors.

The few examples above cited will serve to illustrate the importance to the surgeon of considering both the patient and the type of tumor whenever consulted by a patient bearing a neoplasm. When planning an operation for a tumor, if one is to secure the best results for the patient, the surgeon must analyze the problem in the minutest details, to secure the best results obtainable with the minimum of justifiable risk. To render a prognosis which will best show to the patient and his friends that the surgeon understands the nature and life history of the tumor with which he is dealing the careful accounting of all detail is even more essential.

AN EASILY OVERLOOKED CONDITION

A. W. VANNEMAN, M D., Cumpas, Sonora, Mexico.

The following cases have occurred in my practice. In each case the cause was so insignificant and the treatment so simple that it seems puerile to put the matter in print; but the cause could easily have been overlooked and satisfactory treatment made impossible.

Case 1. A saloonkeeper, aged thirty-four. Married and father of large, healthy family. Good personal and family history until four years ago when he began to cough severely. This progressively increased and was especially noticeable on lying down, so that he was compelled to sleep in a sitting position.

Early in his affliction he had consulted a physician who told him that he had pulmonary tuberculosis. He accepted the dictum as final and attempted to arrange his affairs accordingly. Fearing that the work disagreed with him he sold the farm where he had always lived and bought a small saloon; he soon began to drink heavily in order to make his impending doom less apprehensive.

A stoop-shouldered, poorly nourished, sallow-skinned, halting, unsteady gait, and apparently ten years older than the age given. He was sure that he had lost at least forty pounds in the four years that he had been ill. On assuming a recumbent posture he was seized with a dry, unproductive cough that seemed to start without provocation and when once started was difficult to check. His face and neck became livid and blue with congestion and we feared for a ruptured blood vessel. After the seizure had passed he remained limp and listless for nearly an hour. He also suffered occasional attacks of dizziness, nausea and headache.

Treatment (to be mentioned later), brought about prompt recovery and when last heard of two years later, he was well and had returned to the farm.

Case 2. A wholesale merchant, thirty-eight years of age. Family and personal history, negative except that an uncle and a cousin had been insane for a number of years; and he, himself, had been in ill health for about

a year. He dated his trouble from one morning when, without any cause that he could understand, just as he was awakening from sleep in the morning, he suddenly felt himself falling into space. This sensation was followed by nausea and he felt distressed for the remainder of the day. These attacks returned at greater or less intervals but recently he had a constant feeling of nausea and unsteadiness. He was afraid to walk without an attendant and on his way to consult me was compelled to disembark from the train and finish the remaining thirty miles in a carriage. He was sure that his memory was failing and believed himself to be rapidly traveling the road to the insane asylum, and dwells on his hereditary taint. His wife fears the same direful sequence and tearfully narrates that he has become very irritable and apprehensive and that instead of being attentive, energetic and courteous in his business he has grown careless, apathetic and disagreeable. He had taken all sorts of liver medicines and nerve tonics and sedatives and was wearing spectacles which did not appear to be indicated for any visual defect.

Correct diagnosis and treatment practically restored him in less than twenty-four hours and there has been no subsequent relapse in the eight years that have elapsed.

Case 3. A remarkably well preserved man, ninety years of age. Robust, erect, eyes good for both near and far vision, hearing rather poor, teeth all sound and good, no bad history, always a good appetite but rather abstemious; has always used alcohol and tobacco but very moderately.

A little over two months ago he began to have dizzy spells accompanied by nausea and explosive vomiting. Appetite good but afraid to take food on account of the profuse vomiting that often followed. Was sure that his liver was to blame and had taken all sorts of liver medicines without apparent relief. His family thought that his years were breaking him and fully expected a prompt and possibly a tragic demise.

It required less than an hour to correct his condition and yesterday I was talking to him over his garden fence where he was happily working without thought of his liver and laughingly remarked that he had entered himself against old Mathuselah's record.

Case 4. A mason and plasterer 54 years old. Unmarried. No history of any accident or illness either personal or family until about two years ago he began to suffer severe pains in the back of his head and neck. At first the pain was spasmodic but had become rather persistent with aggravated attacks. When a paroxysm struck him he felt as though a tornado was rushing through his head and would fall down on his face and endeavor to cover his head in order to keep the wind out.

He was unable to pursue his vocation for fear of falling from ladder or scaffolding and was reduced to poverty on account of his inability to work. Although of a naturally cheerful disposition he had become very morose and despondent. He continually wore a large bath towel over his head in order to keep the tornado from getting a start. On concluding his story he admitted having frequently contemplated suicide and frankly expressed the hope that if I could find no relief for him that I would give him some potent narcotic which he could take as he might desire. That death had no terrors for him compared to the misery that he experienced in living.

The cause of his trouble was located and corrected, he was ordered to take a bath (which he needed), change his raiment (which it needed), patronize his barber (which w as a forgotten habit), eat a square meal (if he could rustle it), discard dirty bath towel and make a new start on a late joy route.

He remains somewhat anemic but is working and singing every day and when I happen to meet him he gives an installment of broad and grateful smiles which, so f ar, is all the remuneration that I have received for services rendered—but which is enough.

Many other cases could be related but these suffice. The diagnostic point to be remembered is dizziness. Other sensations may be numerous and subjectively more prominent but are often confusing in making the diagnosis. *Impacted sebum in the ears* was the cause of all the distressing conditions above narrated and its removal with a good syringe and warm water comprehended the specific treatment. Cause and treatment are very simple—not at all commensurate with the subjective distress.

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THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

This society occupies an unique position among the district medical organizations of the country, due to its geographical and fraternal relations to old Mexico.

The district embraced by the association includes Arizona, New Mexico, western Texas and *northern old Mexico* (Sonora, Sinaloa, Chihuahua and Cuahuila). It was organized in 1915, the purpose being to consolidate into a unit the medical men of the southwest and of northern Mexico, with El Paso as the geographic and medical center for the district. The disturbances produced by the revolutions in Mexico have prevented any constructive organization work in the northern states of that country, until recently. In the meantime, that portion of the district within the United States has been well organized and the annual meeting of the "M. & S" is the one distinctive event in medical circles in the southwest district. It has been held at El Paso each year, except in 1917 when it went to Albuquerque, and 1921 when it was held in Phoenix. The unique feature of this meeting consists in the morning clinics during the three days' session, when the surgeons of the host city demonstrate operative work and the physicians hold medical clinics for the instruction and entertainment of the members and visitors. In several of the cities of Arizona and New Mexico, the hospital facilities have developed to the point where it is now possible to hold successful meetings there, and it is no idle dream to look forward to meetings in Chihuahua, Mazatlan, Saltillo or Torreon. The four states included in the district of the association have 250 doctors, a considerable number of these being Americans, while a goodly proportion of our Mexican confreres can speak and understand English.

During the past two years the organization work in northern Mexico has been going steadily forward, under the direction of the secretary of the association, Dr. Harry R. Carson, of Phoenix, until almost all of the American doctors practicing in these northern states and many of the Mexican doctors are members of the organization. It is vastly to the interests of both countries that these professional and fraternal relations be fostered and established on a substantial basis.

SOUTHWESTERN MEDICINE, which is the official organ of the association, goes to about fifty doctors in old Mexico, each member of the organization receiving the journal by virtue of such membership.

The annual meeting of the association will be held in El Paso again this year, the latter part of November, or early in December. It is expected that this will be the largest and most enthusiastic convention the association has yet held. Dr. R. D. Kennedy, of Globe, Arizona, is the president of the association this year.

NEW MEXICO MEDICAL SOCIETY

(Minutes of the Forty-First Annual Meeting, at Albuquerque, June 19th to 23rd, 1923)

June 19th.

Because of the unavoidable absence of the president, Dr. H. A. Miller, of Clovis, and in the absence of all three vice-presidents, the forty-first annual meeting of the New Mexico Medical Society was called to order by the secretary, Dr. J. W. Elder, of Albuquerque, at 10 a. m. June 19th, 1923, in the auditorium of the Elks' Club, Albuquerque, N. M.

The invocation was given by the Rt. Rev. F. B. Howden, Bishop of New Mexico. He was followed by Mr. Arthur Prager, president of the Chamber of Commerce, who extended to the visitors a hearty welcome to the city.

Dr. G. S. McLandress, of Albuquerque, president-elect, was then introduced and assumed the office of president. After a few very fitting remarks by him, the work of the meeting was begun, a meeting which was most interesting and unusually instructive. The program was made up of papers by men of prominence, representing all parts of the country, all being visitors from outside the state.

A number of the papers were lantern slide demonstrations, impossible of reproduction in print without the accompanying cuts.

The following letter from the retiring president, Dr. H. A. Miller, of Clovis, was read:

"To the members of, and visitors to, the New Mexico Medical Society:

Owing to the condition of my mother's health, I am called East. I deeply regret my inability to be present at the forty-first annual meeting of this Society and to hear the splendid program which you have outlined, and to meet our distinguished visitors. In retrospect of the past year of my presidency of the Society, I also regret the paucity of endeavor to further the interests of organized medicine in New Mexico. During the past legislature, a new Medical Practice Act was enacted which is a decided improvement over the old; this act is due largely to the efforts of the old Board of Medical Examiners, who practically drafted the new bill.

By protest from county medical societies and other organizations, the excessive cut in the appropriation for the Public Health Department was saved and that department is still functioning.

Much adverse legislation was proposed in the last legislature and we would suggest to this Society that they take means to have a paid member present at the next legislature to guard its interests.

Wishing you a hearty good time, I am,

H. A. MILLER."

The first paper of the scientific program was by Dr. Leonard Freeman, of Denver, Colo., on "Surgery of the Ancient Inhabitants of the Americas." This was freely illustrated by lantern slides. After presentation of this paper and discussion, recess was taken until 1:30 p. m.

The first paper of the afternoon was by Dr. Wm. Engelbach, of St. Louis, Mo., on "Results of Treatment of Ductless Gland Disorders." This was illustrated by lantern slides. This paper was summarized in the July SOUTHWESTERN MEDICINE under the report of the Arizona Association meeting.

The next paper was by Dr. H. E. Robertson, of the Mayo Clinic, Rochester, Minn., on "The Pathological Physiology of the Duodenum." Summary of this paper was not obtained.

The next paper was by Dr. Ellsworth Smith, of St. Louis, Mo., on "Quinidin in Auricular Fibrillation." This paper was presented before the Arizona Association, also, and summarized in the July issue of SOUTHWESTERN MEDICINE.

The last paper of the afternoon was by Dr. J. Shelton Horsley, of Richmond, Va., on "The Dependence of Surgical Procedures on Biologic Processes." This paper is published in this issue of SOUTHWESTERN MEDICINE.

In the evening, the society and visitors were entertained by a boxing contest at the Armory, where seats were reserved for the New Mexico Medical Society and the New Mexico State Dental Society.

Wednesday, June 20th.

Society was called to order at 9 a. m., by President McLandress.

The first paper was by Dr. E. W. Phillips, of Phoenix, Arizona, on "Hay Fever in Central Arizona." This was the second report of Dr. Phillips concerning his researches into hay fever in Arizona, and the paper is published in full in this issue of SOUTHWESTERN MEDICINE.

The second paper was by Dr. Frederic M. Allen, of New York, on "Insulin in the Treatment of Diabetes." The following summary of the paper was kindly made by Dr. E. W. Phillips for this journal:

"After briefly reviewing the clinical and experimental work which preceded Banting's epoch-making discovery, the speaker proceeded directly to the clinical use of the hormone in diabetes. He advocated a careful control of the diet and a moderate dose of insulin at the beginning of the treatment of uncomplicated cases; a diet low in fats and containing, at first, some 60 grams each of protein and carbohydrate, with an initial insulin dose varying from 5 to 20 units per day. Later the diet and dosage are so increased that the patient is made to remain 5 or 10 pounds below his normal weight (for his height), while the urine is kept free from sugar and the blood content of dextrose approximates the normal. Both the over-indulgence of patients to the point of fatness with glycosuria and the overdosage of insulin, are to be avoided. Home treatment is practicable with a careful laboratory supervision, for even if hypoglycemia occurs it is easily remedied by a prompt dose of glucose. Patients whose diabetes is complicated by gangrene, acidosis or the infections, especially by tuberculosis, receive a much more liberal diet and a dosage of insulin sufficient to enable them to utilize that diet, even up to 90 units per day or more. Insulin is helpful only in the earlier diabetic comas; if the coma is profound, so much intrinsic damage has occurred that no treatment is of service. In the early cases, 25 units intravenously and 50 hypodermically are given at once; fluids are forced and alkalies are exhibited in moderate dosage. When the acute stage is past, the case is treated according to its merits.

The standing dosage is worked out by careful study of the individual patient; some dietetic restriction is necessary and the permanent dose may have to be slightly increased as body weight increases. Most patients can be given a regime which enables them to live in reasonable comfort, to do their usual work, and to escape the complications of diabetes which, with other methods of treatment, shortened the natural lives of many diabetics.

(Note:—Dr. Allen spoke casually, without notes. At the Arizona meeting, the next day, he spoke on the same subject. When questioned regarding the necessity of controlling the dosage with blood sugar determinations, he said that he himself had not yet been able to use insulin accurately and intelligently, without checking the effects by blood sugar determinations. This paper will appear in the September issue of SOUTHWESTERN MEDICINE.

The next paper was by Dr. A. E. Hertzler, of Kansas City, Mo., on "Type and Topography in Tumor Prognosis." This paper is published in full in this issue of SOUTHWESTERN MEDICINE.

The third paper was by Dr. Max Einhorn, of New York, who spoke on "Peptic Ulcers and Their Treatment." This paper was illustrated by lantern slides, and will be published in this journal in an early issue.

Dr. Harry L. Baum, of Denver, Colo., spoke on "Diagnosis of Cases of Foreign Body in the Lung." This paper was illustrated by lantern slides, and will be published in this journal. The following is a brief summary:

This is an accident which he believes to occur much more frequently than it is diagnosed. He emphasized the need of a careful history, which is likely to show a deceptive period of well-being, following the disturbance which immediately follows the aspiration of the foreign body. In time the characteristic symptoms appear; these include paroxysmal cough with dyspnea and sometimes the asthmatoid wheeze heard during expiration. Complete occlusion of a bronchus sets up characteristic signs and symptoms, and a very severe irritative bronchitis may occur, especially in children. If occlusion is partial, the period of relative freedom from symptoms may be prolonged; symptoms suggesting lung abscess or bronchiectasis occur in time. The x-ray is of great importance in diagnosis. Bronchoscopy is, of course, useful and quite necessary for the removal of the intruder. The speaker cited, fully, four illustrative cases, showing x-rays, lantern slides and the extracted foreign bodies.

After adjournment of the afternoon session, an automobile trip to the Manzano Forest School for Boys was taken. This school was recently established by Dr. J. W. Elder, of Albuquerque. A picnic supper was served at the school, after w hich the visitors and members returned to the Elks' Club and enjoyed a dance in the ball room.

Thursday, June 21st.

The first paper of the morning session was by Dr. W. L. Brown, of El Paso, Texas, on "Some Interesting Bone Cases." This paper was illustrated by lantern slides and was given in the well known breezy manner of the author, showing some very interesting inflammatory and neoplastic bone conditions.

The second paper was by Dr. John W. Cathcart, of El Paso, Texas, on "Radiation of the Female Pelvis in Non-Malignant Cases." The author has enjoyed a large experience in radiation therapy and presented a very convincing argument for the use of this class of therapy in non-malignant pelvic conditions in women. The paper will appear in an early issue of SOUTHWESTERN MEDICINE.

The next paper was by Dr. James T. Case, of Battle Creek, Mich., on "A Resume of the Diagnosis of Gallstones." This was illustrated by lantern slides. A summary of this paper was not obtained.

The last paper of the program was by Dr. Clark Halley, of Chicago, Ill., on "Treatment of Fracture of the Clavicle without Deformity and of the Thigh without Shortening." This interesting subject was not summarized by the reporter.

In the evening, the annual banquet of the society was held at the Alvarado Hotel.

In the afternoon of this same day, there was a reception for the visiting ladies at the Country Club.

MINUTES OF THE HOUSE OF DELEGATES

The first meeting of the House of Delegates was held on Thursday afternoon, June 19th, at 1 p. m., the president, Dr. G. S. McLandress presiding. The following delegates were present:

Bernalillo County	P. G. Cornish, Jr.
Chaves County	W. T. Joyner and T. E. Pressley
Eddy County	H. A. Stroup
Luna County	P. M. Steed
McKinley County	W. B. Cantrell
Santa Fe County	D. B. Williams
Las Vegas County	E. B. Shaw

The secretary reported that the membership of the New Mexico Medical Society consisted of 137 members, made up as follows, according to reports received from the secretaries of the constituent county societies:

Members at large	2
Bernalillo County	38
Chaves County	25
Colfax County	13
Dona Ana County	14
Eddy County	1
Luna County	6
Las Vegas County	11
McKinley County	11
Santa Fe County	16

The following resolution was read and approved: "Resolved, that in the first paragraph of Article XI. of the Constitution, the words "'$3.00 per capita per annum" be changed to read "$5.00 per capita per annum." This resolution constituting an amendment to the Constitution lies over until the next annual meeting for final action.

The application of Dr. Stephen H. Betts, of Alamagordo, for membership in the state society was accepted.

Dr. Frank E. Mera, of Santa Fe, was elected delegate to the American Medical Association for the term 1923-1925. Dr. L. S. Peters, of Albuquerque, was elected alternate.

The second meeting of the House of Delegates was called to order at 1:30 p. m., June 20th, by the president.

The following were elected as officers for the ensuing year.

President—Dr. G. S. McLandress, Albuquerque.

President-Elect—Dr. J. W. Stofer, Gallup.

Vice-Presidents—Drs. D. B. Williams, Santa Fe; T. E. Pressley, Roswell; P. G. Cornish, Jr., Albuquerque.

Secretary, Treasurer and Associate Editor—Dr. C. M. Yater, Roswell.

Councillors—For three years, Drs. F. H. Crail, E. Las Vegas, and E. L. Ward, Santa Fe.

For two years—Drs. P. M. Steed, Deming, and P. G. Cornish, Albuquerque.

For one year—Drs. H. V. Fall, Albuquerque, and J. B. Westerfield, Clovis.

The most hearty invitation of the Santa Fe County Society to the State Society to hold the 1924 meeting at Santa Fe was unanimously accepted, with the provision that the meeting be held not later than May 30th.

The following resolution was presented and adopted:

Whereas, the last State Legislature found it necessary to curtail expenditures as much as possible, and, therefore, reduced the appropriations for State departments, and

Whereas, the reduction in the appropriation for the State Board of Public Welfare will materially cripple the work of the State Bureau of Public Health, for the next two years, and

Whereas, we believe that the work of the State Bureau of Public Health is of growing importance to the State of New Mexico; be it therefore,

Resolved, that the work of the State Bureau of Public Health so far accomplished has the endorsement of the New Mexico Medical Society,

Resolved, that the organized physicians of New Mexico are ready and willing to cooperate with the State Bureau of Public Health in its efforts to increase the scope and effectiveness of its work, so long as the rights and privileges of the medical practitioner are respected.

Resolved, that it is the sense of the New Mexico Medical Society that the highest economy and efficiency will be served by placing all health work, of whatever nature, under the control and direction of the State Bureau of Public Health;

Resolved, that the organized physicians of the State pledge themselves to avoid placing an unnecessary burden upon the State Public Health Laboratory, by sending to private laboratories such specimens as can be paid for by their patients, thus relieving the State Laboratory of undue expense,

And, be it finally Resolved, that the Secretary of this Society be instructed to send copies of these resolutions to the Governor of the State, to the Secretary of the State Board of Public Welfare and to the State Bureau of Public Health.

The following resolution was then read and heartily approved:

"Resolved, that the New Mexico Medical Society, in convention assembled, hereby expresses its sincere appreciation to the Elks' Lodge for the courtesies shown in supplying us a place of meeting, for social gatherings and for many other courtesies shown to the members, collectively and individually.

And, further, the thanks of the Society are extended to the Chamber of Commerce and the good citizens of Albuquerque for the cordial welcome given and the acts of kindness shown and to the newspapers of the city for the splendid publicity given to the program of the meetings.

The convention also wishes to thank the Bernalillo County Medical Society for its kindness in preparing so royally for our entertainment and convenience, and to Dr. Elder, one of its members, for the entertainment furnished.

And further be it resolved that our sincere appreciation be expressed to the visiting brothers from other states who presented us with such a wealth of information in their papers and discussions.

E. B. SHAW,
P. M. STEED, Committee.

The meeting adjourned, sine die.

J. W. ELDER,
Secretary."

BERNALILLO COUNTY MEDICAL SOCIETY

The last meeting of the Bernalillo County Society was held on June 6, 1923. The only paper presented was by Dr. L. S. Peters, on "Frenzied Therapeutics in the Treatment of Tuberculosis." This paper had been prepared for the meeting of the American Anti-Tuberculosis Association, in Santa Barbara.

Routine business occupied the remainder of the program, and the society adjourned to meet the first Wednesday in September.

ALBUQUERQUE NEWS ITEMS

Dr. Carl Mulky spent the early part of July on a fishing trip in the Jemez Mountains.

Dr. L. S. Peters attended the American Anti-Tuberculosis Association in Santa Barbara and the American Medical in San Francisco, spending the remainder of a month touring the state.

Drs. Evelyn Frisbie and Dr. L. J. Garduno attended the American Medical Association meeting, returning about the middle of July.

Dr. M. K. Wylder and Miss Esther Rost, of Albuquerque, were married on June 1st, leaving for a tour of California, which included the American Medical Association meeting in San Francisco.

Dr. H. L. Brehmer suffered the loss of his Lincoln coupe in a fire which destroyed the Quickle garage, on June 28th.

The First National Bank's new nine story office building will be ready for occupancy August 1st. Most of the Albuquerque physicians will be found in this building after the date mentioned.

Dr. L. S. Peters has recently bought the three-story business block known as the K. P. Building. The treatment of tuberculosis apparently is flourishing.

Dr. and Mrs. P. G. Cornish, Sr., accompanied by Mrs. P. G. Cornish, Jr., are on a visit to her home in Nova Scotia, expecting to be gone about a month.

Dr. O. C. West, who has been the City and County Health Officer in Albuquerque for the past three years, is leaving on Aug. 1st, to accept a position with a mining company in Central America.

Dr. D. B. Williams, formerly of Portales, N. M., has been selected for the vacancy created by the resignation of Dr. West.

Dr. L. G. Rice announces that the new ten room addition to the Women's and Children's Hospital, in Albuquerque, has been completed. In this addition is included an elevator, an x-ray and clinical laboratory.

The New Mexico State Golf Association will hold their annual state meet on the Albuquerque links beginning the morning of August 31st. All the New Mexico physicians who feel that they can play, as well as those who would like to be able to play, are urged to attend this meet.

Dr. T. P. Martin, of Taos, made a flying visit to Albuquerque, early in July.

CHAVES COUNTY NEWS

(Dr. C. M. YATER, Secretary, Roswell)

At the regular meeting of the general staff of St. Mary's Hospital, Roswell, N. M., held on the evening of July 17th, there were present Drs. Smith, Bradley, Phillips, Galloway, Goodsell, Fisher, McClane, Horwitz, Beeson, Joyner and Yater.

Dr. Fisher presented the case of a Mexican who was running too fast in an automobile at night, without lights, and ran into a standing wagon, the tongue of which pierced the radiator of the auto, ran through the body of the car and struck the abdomen of the man, who died in a few minutes. The abdominal organs were fearfully macerated, without showing any marks on the skin of the abdomen.

Dr. Galloway presented the case of an unusual tumor, springing from the uterus which, upon physical examination, could not be definitely diagnosed as either solid or fluid, but upon removal proved to be a fibro-myxoma weighing eleven pounds. This introduced the subject of large abdominal tumors, and Dr. Fisher recalled one removed by him which weighed twenty-one pounds, and Dr. Bradley one which weighed twelve pounds, this latter being a myoma of the ovary which had been diagnosed a pregnancy by another physician, although it was in an unmarried woman of irreproachable character.

Dr. Joyner presented a case of empyema of tuberculous origin which had been under observation for ten or twelve years, and had been operated many times in an endeavor to close an old discharging sinus, but without success, and which, at this time, has become malignant. Dr. Joyner promised to keep the staff advised as to the progress of the case, as it is of unusual interest because of the fact that it has occurred in a collapsed lung and is now being given intensive x-ray treatment. Malignancy of the lung being of rare occurrence, it was suggested that, in view of the fact that pneumothorax is now being so commonly practiced in tuberculosis, we should be on the lookout for the occurrence of malignancy in such cases.

After adjournment of the formal meeting, the Hospital sisters gave the doctors a nice treat of cake and soft drinks.

C. M. YATER, M. D.,
Staff Secretary.

Owing to several contributing causes, the Chaves County Medical Society is having slim attendance this summer. Heretofore, we have been in the habit of recessing the latter part of May, until the first of September, and the doctors find it hard to get the recess idea out of their heads. Then the weather has been warm, which makes another incentive to stay at home instead of going to the medical society. However, we are having a fair attendance with some very interesting meetings.

The following doctors from Chaves County attended the meeting of the state society, at Albuquerque: Drs. H. A. Ingalls, C. F. Beeson, T. E. Presley, W. T. Joyner, K. A. Bryant, and C. M. Yater, the latter being elected Secretary-Treasurer and Associate Editor for the ensuing year.

Dr. H. A. Stroup, of Artesia, Eddy County, also attended the state meeting at Albuquerque.

Dr. H. V. Fall is away from the city, for a summer vacation.

Dr. E. M. Fisher has recently returned from an extended trip through California, by auto, incidentally attending the American Medical Association meeting at Frisco.

Dr. D. D. Swearingen has located his family in the mountains west of Roswell for the hot summer months, visiting them each week-end.

Dr. W. T. Joyner and his family recently spent a week in the mountains.

Dr. C. M. Mayes, one of the most esteemed members of the Chaves County Medical Society, has moved to California. The society very much regrets Dr. Mayes' move but unite in wishing for him health, wealth and happiness in his adopted home.

NEW MEDICAL PRACTICE ACT FOR NEW MEXICO

New Mexico has a new Medical Law which became effective June 7, 1923. A new Board of Medical Examiners was appointed by Governor Hinkle on that date. The following are the members of the new board:

Dr. W. T. Joyner, Roswell, N. M.
Dr. L. G. Rice, Albuquerque, N. M.
Dr. H. A. Miller, Clovis, N. M.
Dr. J. A. Massie, Santa Fe, N. M.
Dr. H. G. Watson, Gallup, N. M.

This board met at Santa Fe on June 18th and organized by electing the following officers:

Dr. L. G. Rice, Pres., Albuquerque, N. M.
Dr. H. G. Watson, V-Pres., Gallup, N. M.
Dr. W. T. Joyner, Sec'y & Treas., Roswell, N. M.

The next regular meeting of the board will be held in Santa Fe, N. M., October 8, 1923. The principal changes effective by the passage of this new law are as follows:

The board will hold regular meetings on the second Mondays in October and April of each year.

License can only be granted on examination or reciprocity.

To obtain a license by reciprocity, the applicant must have obtained his license by examination and have a diploma from a medical school which has a standard as high as required by the Association of American Medical Colleges.

The same qualifications as to graduation are required of applicants for a license by examination. A fee of $50.00 is required of applicants. A temporary permit may be issued by the secretary. An additional fee of $10.00 is required for a temporary permit.

COCHISE COUNTY NEWS NOTES

(Dr. N. V. ALESSI, Secretary)

Cochise County Medical Society met at regular session, City Hall, Bisbee, Saturday, June 2, 1923. Dr. R. B. Durfee presided in the absence of Dr. A. M. Wilkinson.

Members Present — Drs. French, Hunt, Causey, Lund, Reese, Hawley, Ferguson, Adamson, Wright, Hagan, Alessi.

Dr. Ferguson reported a case of Paget's disease, in a Mexican, male, 24. years old. Family history negative. Present history began four years ago with a pimple in the breast, and some ulceration and this progressively became worse, ulceration extending into chest. Wassermann negative. The interesting part of this case is that it is rare in the male. Pathological report from Pathological Laboratory, Phoenix, was malignancy.

Dr. Reese reported a case of an old Mexican woman with pneumonia, who recovered, then began having a sore throat, difficult breathing, loss of voice, hoarseness and sense of pressure on trachea. Developed a goiter about the size of a hen's egg, left side, also enlargement on right side. Has pain in both arms and all the other symptoms of goiter present.

Dr. Wright reported the causes of death at the Calumet Hospital in the year 1922. He divided the cases into groups of the unavoidable deaths and those that possibly could have been avoided. The first case of unavoidable death was a case of dementia which was admitted into the hospital in coma and died in less than two days after admission. Another case was of sarcoma of the spinal cord. Another of carcinoma of the larynx and carcinoma of the rectum.

Out of the cases that possibly could have been avoided if they had come under the attention of the physician earlier and proper treatment been instituted, were cases of intestinal obstruction and of hypertrophy of prostate.

It was to the gratification of the physicians that the only operative cases that died at the hospital were cases which were admitted into the hospital as moribund or cases that are usually expected to die.

The lesson for us to learn, owing to the fact that most of the operative cases that died were due to intestinal obstructions, is to recognize them early and operate immediately.

Dr. Ferguson reported the deaths at the Copper Queen Hospital in the year 1922 and there most of the deaths were of cordio-renal cases, and also the causes of death at the County Hospital were reported by Dr. Causey. In the reports of death from the three hospitals, there was only one case of appendicitis that died and this was a case which was admitted into the hospital with generalized peritonitis.

There was a motion made by Dr. Lund and seconded by Dr. Adamson that the program part of the next month include a report of causes of death at the C. & A. Hospital, Bisbee.

Motion to adjourn prevailed.

ARIZONA STATE HOSPITAL SUFFERS

Recent developments at the Arizona State Hospital for the Insane well illustrate the contention of the Committee on Public Policy of the State Asosciation, that it is a poor policy to have as the superintendent of such an institution a layman who is associated with the state government. Under the present arrangement, the Secretary of the Board of Control of State Institutions is the actual governing power over the State Hospital, and when he chooses to exercise this power, he can create havoc with the medical work at the hospital, as has recently been demonstrated.

Dr. Kingsley, the superintendent of the hospital, keenly interested in the treatment of the sick people entrusted to his charge, found his work hampered and interfered with by the Board of Control to such an extent that he was merely a figurehead. Finding that he was not to be permitted to conduct the institution as a hospital, he resigned, leaving the seven hundred sick men and women to be the political play-thing of the individuals who are using all the jobs in the various state institutions to build up a political machine.

When a hospital, containing seven hundred sick people, afflicted with the most distressing of diseases—insanity—ceases to function as a hospital and is used as a political football, both the state and the individuals involved are bound to be discredited sooner or later.

NEW BOARD OF MEDICAL EXAMINERS IN ARIZONA

The change in the political complexion of the state government in Arizona resulted in the usual change in the Board of Medical Examiners, the new board going into office July 1st. The personnel of the board is as fololws

Dr. H. T. Southworth, Prescott, President.

Dr. W. O. Sweek, Phoenix, Secretary.

Dr. W. F. Chenoweth, Nogales.

Dr. A. G. Schnabel, Tucson, (Homeopath).

Dr. Harriet Johnson, Bisbee, Arizona (Osteopath).

ARIZONA NEWS

Dr. A. C. Kingsley has resigned as superintendent of the Arizona State Hospital, the medical work there being temporarily in charge of Dr. Geo. Stephens, the assistant superintendent. Dr. Kingsley is, at present, in charge of the Magma Hospital at Superior, while Dr. C. R. Swackhamer, their regular surgeon, is taking a vacation.

Dr. John Wix Thomas, of Phoenix, left July 31st, for a month's vacation in California, his main purpose being to lower the course record at the Wilshire Club golf course.

Dr. Chas. S. Vivian, of Phoenix, who was recently operated for appendicitis, and who later went to Los Angeles for recuperation, has fully recovered and returned to his practice.

Dr. James E. Drane, for many years engaged in general practice in Mesa, Arizona, and one of the most popular and well-known practitioners of the state, has moved to Phoenix, taking over the offices of Dr. Earl M. Tarr, in the Heard Building. He will specialize in diseases of women and children.

Dr. Earl M. Tarr, well known pediatrician of Phoenix, Arizona, has moved to the coast and will probably be located in Los Angeles.

Dr. George A. Bridge, of Bisbee, Arizona, who has been taking post-graduate work in New York for two months, has returned to his post as chief surgeon of the Copper Queen Hospital, releasing Dr. Robt. Ferguson, who is now away doing special work in the east.

Dr. Ralph Herendeen, formerly on the staff of the Copper Queen Hospital, in charge of their x-ray department, later engaged in x-ray work in the army, is now in charge of the roentgen ray department of the Memorial Hospital in New York, where his work is winning deserved recognition.

Dr. and Mrs. F. T. Wright sailed from Quebec, on July 13th, for a tour of England, France and Switzerland.

RADIUM *and* ONCOLOGIC INSTITUTE

1151 West Sixth Street, Los Angeles, California

A THOROUGHLY equipped institution affording unexcelled facilities for Radio Therapy and the scientific study and treatment of Neoplastic diseases.

RADIUM Laboratory possesses a large and adequate quantity of Radium, emanation apparatus and all necessary appliances, affording the most complete facilities for Radium Therapy. Also Radium emanation for internal administration in appropriate cases.

X-RAY department is fully equipped including the new 280,000 volt deep Therapy apparatus.

LABORATORIES completely equipped for clinical, pathological and research work.

HOSPITAL, offices, examining rooms, laboratories, and clinic located in the new fire-proof building.

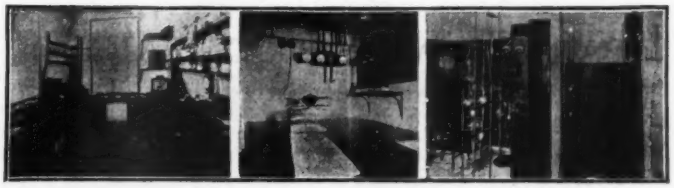
This institution, through the correlation of its various departments and personnel, desires to cooperate with the Medical Profession in the diagnosis and treatment of appropriate cases. Your inquiry or request for specific information on any point will be welcome.

REX DUNCAN, M.D.
Medical Director

CALVIN B. WITTER, M.D.
Roentgenologist

EDWIN D. WARD, M.D.
Assistant Medical Director

T. C. CROWELL, M.D.
Pathologist



RABIES VACCINE—
The Factor of Safety

RABIES VACCINE (Cumming), P. D. & Co., contains no living virus. All risk of precipitating an attack of hydrophobia by the use of the vaccine is thereby obviated. With the original Pasteur preparation certain precautions must be observed if risk of infection is to be avoided.

The safety and efficiency of the Cumming modification of the original process has been amply demonstrated by its employment in over five thousand cases. Paralysis or other untoward result has never been observed following this treatment.

The sterility and safety of Rabies Vaccine, P. D. & Co., is secured by dialyzing a 1% suspension of rabic brain tissue (from rabbits dying of rabies induced by an injection of fixed virus) against running distilled water, the infectivity of the virus being thus destroyed without impairing the specific activity of the product.

The innocuousness of the finished material is then demonstrated by the injection of a given quantity beneath the dura of rabbits and subcutaneously in guinea pigs and mice. Sterility tests are likewise made, to insure freedom from bacteria. The product is standardized by weight so that 2 cc of suspension (the contents of one of the syringe containers) will contain sufficient material for one injection (one dose) for an adult.

PARKE, DAVIS & COMPANY

DETROIT, MICHIGAN

Weed Hay Fever

THE Late Summer and Early Autumn Type of Hay Fever is caused by many of the common weeds, as—Ragweed, Russian Thistle, Sage Brush—the species differing widely according to locality. To assure specific treatment diagnostic tests are essential. To assure preseasonal treatment early diagnoses should be made,—otherwise the less desirable, though often beneficial, coseasonal treatment will be involved. List of late flowering weeds, showing regional distribution and time of pollination, sent on request.

GIANT RAGWEED *Ambrosia trifida*

RUSSIAN THISTLE *Salsola pestifer*

SAGE BRUSH *Artemisia tridentata*

The Arlington Chemical Company

Yonkers, New York

BOOK REVIEWS

Nursery Guide for Mothers and Nurses. By Louis W . Sauer, M. A., M. D., Senior Attending Physician, Evanston Hospital formerly Attending Physician Chicago I nfant Welfare, and Assistant Attending Physician Children's Memorial Hospital, Chicago. Illustrated. St. Louis. C. V. Mosby Company. 1923. 188 pages. Price $1.75.

The li ttle volume presented by Dr. Sauer is full of sane advice. The author wisely left out symptoms and diagnosis of all the ills that the young child is heir to, and he presented his subjects in a way that is a real aid to the young mother. The subject matter is so arranged that information is readily found, the directions are concise and clear, and the procedures are rational. Perhaps a little more detail in the prenatal preparation could have been profitably inserted. Taken as a whole, this little book easily ranks among the best of its kind available today.—H. L.

Legal Medicine and Toxicology. By many specialists. Edited by Frederick Peterson, M. D., Managing Craig Colony for Epileptics; Walter S. Haines, M. D., late Professor of Chemistry, Materia Medica and Toxicology, Rush Medical College; and Ralph W. Webster, M. D., Assistant Professor of Medical Jurisprudence, Rush Medical College. Second Edition. Two Octavo volumes, totaling 2268 pages, with 334 illustrations, in cluding 10 insets in colors. Philadelphia and London: W. Walfare, and Assistant Attending Physician B. Saunders Company. Cloth $2.00 net. Philadelphia. London.

This book is of exceptional value and should be in the library of every advanced thinker in the profession.

The choice of authors for the several subjects is especially good and the subjects have been treated in a full and free manner with the proven advanced knowledge of the subect as a guide.

The chapter on expert evidence is especially enlightening. The subect is covered by the authors, and no physician that ever expects to be called to testify before a court should be without the knowledge contained therein.

Railway injuries, DeCosta and Jones; injuries and disorders of the nervous system, Barley and Kennedy; mental diseases, Barrett; Malingering, Thomas; state laws relating to insane, Koren; are especially worth attention.

The second volume, while technical, completely covers the subject of Toxicology. It describes the later laboratory methods and covers the subject so completely that no modern loboratory worker should be without it.

The value of the work both as an exponent of modern knowledge and a book of reference can hardly be overestimated.—S. D. S.

The Clinics and Collected Papers of St. Elizabeth's Mospital, Richmond, Va., Contributed by the Staff. Illustrated. C. V. Mosby Company, St. Louis, 1923. Cloth $7.50 net.

In the clinics of St. Elizabeth's Hospital, centering about the work of Dr. J. Shelton Horsley, of Richmond, we find a variety of subjects; in fact, the major portion of the work consists of the recital of interesting surgical cases by this surgeon. A number of important cases are treated in papers more extensively, systematically and thoughtfully than could be expected in extemporaneous clinical talks. The operations for duodenal ulcer are given with considerable detail together with a discussion of pyloroplasty gastro-enterostomy, and simple excision as applied most satisfactorily in the treatment of different types of ulcers. This is followed by a discussion of the medical features of postoperative treatment. All in all, it gives a rather concise summary of treatment for duodenal ulcer. A new operation for ulcer is also described.

The collected papers contain much interesting reading on subjects such as, "The Ideals of the Surgeon," "Some Fatal Surgical Errors," "Biological Principles in Surgical Practice," and a rather extensive discusison of surgical drainage from the same biological view point.

"Some Inconsistencies in Surgical Technic" group together many valuable ideas that may also be found expressed in various places in this author's book on surgery.

Medical and genito-urinary subjects, x-ray and dietotherapy occupy lesser portions of the book. A paper on protein sensitization contains some interesting statements and some rather unexpected conclusions. The whole work has been prepared with systematic care and thoroughness.—E. B. R.

THE PREVENTION OF RABIES

Dr. J. G. Cumming, formerly of Ann Arbor, Mich., has subjected rabies vaccine to certain manipulations which, it is claimed, make it perfectly safe in the hands of any physician, without in the least degree impairing its effectiveness. In fact, we are told that the Cumming vaccine (made from the brain of rabid animals) is more active, confers immunity more rapidly, than the desiccated cord with which the classic Pasteur treatment is performed.

Rabies Vaccine (Cumming) is supplied by Parke, Davis & Co. in packages of seven doses, three such packages for a complete series of 21 daily injections, or two packages (14 doses) in cases of slight wounds on the lower limbs. The vaccine is shipped in installments to minimize the risk of exposure to high tem peratures.

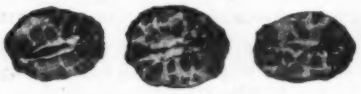
Parke, Davis & Co. have a booklet on Rabies Vaccine which they offer to all medical inquirers free.

PROPAGANDA FOR REFORM

A PATENTED CONSUMPTION CURE:

The U. S. Patent Office has issued patents for many preparations to be used in medicine for which there has not been the slightest scitntific justification. The most recent and most flagrant lack of intelligent patent law administration is to be found in a patent issued to Sergluson and exploited by the Savrite Medical Manufacturing company, Los Angeles, Calif., for an alleged cure for tuberculosis.

This is the patented cure: Pure olive oil, 1 gallon; squill root, 3 pounds; bitter almonds, 1¼ pounds; nettle (the plant except the root), 1½ pounds; red poppy flower petals, 1 pound. These various ingredients are to be mixed, put in a closed container, gradually warmed and left standing for about 72 hours, when the mixture is squeezed, mixed and filtered. The filtrate comprises the "cure." (Jour. A. M. A., Feb. 10, 1923, p. 420.)



25% of Bran

Hidden in a morning dainty

Pettijohn's is a rolled soft wheat—the most flavory wheat that grows. Everybody likes it. In countless homes it has become the favorite morning dish.

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of Southwestern Medicine, published Monthly, at Phoenix, Arizona, for April 1st, 1923.

State of Arizona)ss.
County of Maricopa,)

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared W. Warner Watkins, who, having been duly sworn according to law, deposes and says that he is the Editor of the Southwestern Medicine, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation,) etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Name of Post office address—
Publisher, Arizona Printers, Inc., Phoenix, Ariz.
Editor, W. Warner Watkins, M. D., Phoenix, Ariz.
Managing Editor, samee
Business Managers, Board of Managers, Dr. James Vance, Mills Bldg., El Paso, Texas, Chairman.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, givee its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

El Paso County Medical Society, El Paso, Texas.
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Nex Mexico Medical Society, Dr. J. W. Elder, Secy,. Albuquerque, N. M.
List of officers of these societies attached hereto.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state)
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4 That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is—
(This information is required from daily publications only.)

W. WARNER WATKINS, Editor.

Sworn to and subscribed before me this 1st day of June, 1923.

(SEAL.) R. P. JOHNSON, Notary Public.

(My commission expires July 12, 1926.)

NOTE.—This statement must be made in duplicate and both copies delivered by the publisher to the postmaster, who shall send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office. The publisher must publish a copy of this statement in the second issue printed next after its filing.

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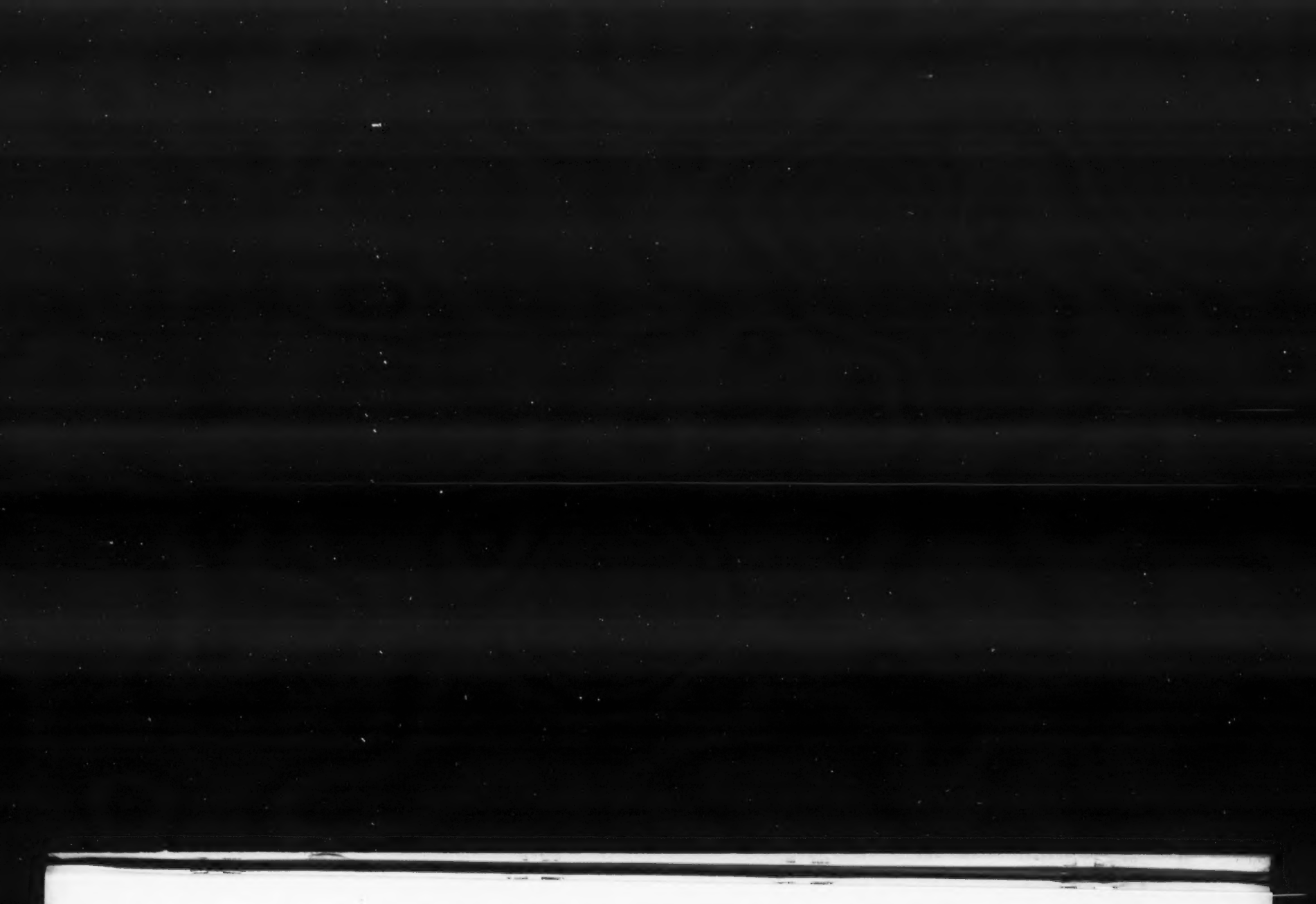

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